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HANDBOOK
FOR THE
I-P R. Q. F. GUN.
(MOUNTED ON FIELD CARRIAGE)
1902.

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HANDBOOK

FOR THE

1-P R. Q. F. G U N

(MOUNTED ON FIELD CARRIAGE).



1902.



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| | |
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NOTE.—This book is corrected up to April, 1902. Any alterations which may be suggested should be forwarded to the Chief Inspector, Royal Arsenal, Woolwich.

1-PR. Q.F. GUN, MARK 1.

DESCRIPTION.

| | | | | | | |
|------------------|----|--------------------------|--------|----|------------------------------------|-------------|
| Material | .. | .. | .. | .. | Steel. | |
| Weight (nominal) | .. | .. | .. | .. | 410 lbs. | |
| Length | { | with shoulder-piece | .. | .. | 87.58 inches. | |
| | | without | .. | .. | 73.75 " | |
| | | barrel (to face of lock) | .. | .. | 43.56 " | |
| Calibre | .. | .. | .. | .. | 1.457 " | |
| Rifling | { | system | .. | .. | Polygroove, plain section. | |
| | | length | .. | .. | 39.05 inches. | |
| | | twist | .. | .. | Uniform, 1 turn in 29.92 calibres. | |
| | | grooves { | number | .. | .. | 12. |
| | | | width | .. | .. | .322 inch. |
| | | | depth | .. | .. | .0156 inch. |
| Firing mechanism | .. | .. | .. | .. | Percussion. | |

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The gun is made of steel, and consists generally of two portions, i.e., (1) recoiling, and (2) non-recoiling. The recoiling portion, which consists of the barrel, recoil plates, and lock, is forced to the rear, when the gun is fired, by the explosion of the charge, the parts being automatically returned to the firing position by means of the barrel and crank springs. The non-recoiling portion consists of the barrel case, feed block, and breech mechanism case, the latter being provided with trunnions for the attachment of the gun to the carriage.

The barrel is of steel, chambered to suit the cartridge, and rifled. Trunnions are provided on both sides at the breech end for the attachment of the recoil plates, and a recess is formed on the upper surface for the reception of one end of the crank lever of the feed block. A nut and washer for retaining the barrel spring is provided near the front end. The outer surface of the barrel is coated with copper to protect it from rust. Recoiling portion.

The recoil plates are "right" and "left" respectively, and are each provided with a hole near the front end for the reception of the barrel trunnions. Bosses are provided on the outside of the plates at the rear, forming bearings for the crank, the outer end of the boss on the left plate being prepared for the reception of the crank spring case. A flat spring for retaining and centering the lock in the firing position is riveted to the "right" plate at the front end. Longitudinal grooves are formed on the inside of the plates which serve as guides for the lock.

The lock consists of a steel frame fitted with a striker, cocking lever, trigger sear, safety catch, and main spring for percussion

firing. An extractor, fitted with a flat spring, gib, gib spring, pawl spiral spring, and cover, is attached to the front face of the lock frame. The lock is actuated by a crank and connecting rod fitted to the recoil plates, the crank being provided with a lever with handle for withdrawing the lock on one side, and with a helical spring for returning the lock to the firing position on the other.

Non-recoiling
portion.

The barrel case is of gunmetal, and is fitted with glands at both ends packed with asbestos packing to suit the barrel, which passes through the case. It is provided with a filling hole in the upper side near the breech, and an emptying hole in the under side near the muzzle, both of which are fitted with screw plugs secured by chain and eyebolt. Another hole connected with the steam tube in the case is provided in the upper side near the muzzle, this hole is stopped by a cork plug. The barrel case holds about 11 pints.

The ejector tube with spring is fitted to the under side of the barrel case.

The breech mechanism case consists of two steel side plates "right" and "left" respectively, gunmetal buffer block, and steel cover plate. The side plates are provided with trunnions for the attachment of the gun to the carriage, and are secured to the barrel case by means of dovetail projections and a taper fixing pin. Elevating brackets for connecting the gun to the elevating gear of the carriage are attached to the lower edge of the plates at the rear. Fixed cams with pawls, springs, and stop studs for guiding and controlling the extractor of the lock and barrel stops to prevent undue recoil of the barrel are attached to the inside of each plate. A stud for the attachment of the shoulder piece is riveted to the left plate immediately in front of the elevating bracket, the shoulder piece is further secured to the elevating bracket by a fixing screw. A roller and crank lever latch are fitted to the outside of the "right" plate, also two studs for ammunition box. A regulator and indicator plate is also fitted to the rear end of the "right" plate; the regulator can be adjusted by means of the lever and indicator plate so that:—

- (a) The gun cannot be fired.
- (b) For single shots only.
- (c) For automatic firing.

A trigger bar connecting the trigger with the trigger scar is fitted by means of two studs to the lower part of the "right" plate. The bar is retained in position by a spiral spring.

The side plates are connected at the rear end by the buffer block, to which they are attached by dovetail projections and a taper fixing pin. The buffer block is provided in the centre with a buffer case, gland, and piston; at the lower end with a trigger guard, trigger lever, connecting link, and trigger; and on the upper rear face with a tangent sight bracket.

The cover plate is hinged to the side plates at the front end by a joint pin, and is provided on the under side with a guide block, which serves to guide the extractor and retains the lock frame in position when clear of the groove in the recoil plates. A bracket with foresight and cap is riveted to the upper right side at the front. The plate is retained in the closed position by a securing pin with chain and eyebolt.

The feed block is of gunmetal, and is fitted with a slide actuated by a crank lever in the block, one end of the lever engaging with a stud on the slide, and the other end with a recess in the barrel.

The slide is provided with two actuating levers for travelling the ammunition belt through the feed block, and two retaining levers are provided in the feed block for holding the belt while the slide is moving in the opposite direction. Steel guides are fitted to the upper and lower sides of the feed block to ensure the cartridges being in the correct position for withdrawal by the extractor of the lock. Cartridge and shell stops inside the feed block serve to prevent cartridges being pushed too far through the feed block.

SIGHTING.

The gun is sighted on the right side with fore and tangent sights.

The fore sight consists of a steel acorn point in a bracket which is attached to the cover of the breech mechanism case.

The tangent sight is made of steel, having a crosshead giving 2 degrees deflection right and left, provided with a notched deflection leaf and traversing screw. The sight bar is fitted with a removable range strip graduated with a yard scale to 3,000 yards, reading to 100 yards, and is provided on the front face with a rack gearing with the pinion in the sight socket. The sight is supported in a bracket attached to the rear end of the gun, and is secured by a pin with chain.

ACTION OF MECHANISM.

Suppose the gun to have just fired:—The explosion causes the recoiling portion to move backwards through a distance of about $1\frac{1}{2}$ inches, thereby causing the curve on the under surface of the crank handle to press against and move along the roller, thus rotating the crank (thereby drawing back the lock) and causing the crank handle to fly forward with an accelerated movement; thus a large portion of the energy of recoil is transferred to the crank. The travel of the recoiling portion to the rear compresses the barrel spring and also moves the actuating levers in the feed block slide to the right, so as to engage behind a fresh cartridge in the belt. When the lock moves backward the extractor withdraws the empty case from the barrel and a fresh cartridge from the belt in feed block. The extractor is kept in position by means of its horns, which move along the upper surface of the solid cams inside the breech case until the cartridge is clear of the belt; when it arrives at the rear end of these cams, it falls, partly by its own weight and partly by the action of the guide block on the cover, thus bringing the cartridge drawn from the feed block opposite the chamber, and the empty case drawn from the chamber opposite the ejector tube. The cover block also keeps the lock in position when the latter is quite back, as its flanges are then clear of the guides on the recoil plates.

Action on
recoil.

When the force of recoil is expended, the action of the barrel and crank springs comes into play, carrying the recoiling portion forward and revolving the crank by the unwinding of the crank spring, thereby forcing the lock to the front. As the recoiling portion travels forward it moves the actuating levers on the feed block slide to the left, and thus brings up, automatically, a fresh cartridge into position in the feed block. As the lock moves

Action of
barrel and
crank springs.

Cocking
action.

forward into the firing position, the live cartridge and the empty case are placed in the barrel chamber and ejector tube respectively, the extractor is moved upwards by the actuating lever acting on the extractor levers, thereby leaving the empty case in the ejector tube, where it is held by the ejector tube spring until pushed out by the next case, also causing the live cartridge to slide over the gib until opposite the firing hole, and engaging a fresh cartridge which has been automatically moved up into position in the feed block. The turning of the crank lever to the front not only draws the lock away from the barrel, but also gives a downward motion to the connecting rod and rear portion of the actuating lever, which latter, bearing on the tail end of the cocking lever, rotates it on its axis, and the head of the lever, being engaged in a recess in the striker, forces the latter to the rear, compressing the main spring. When the bent of the cocking lever has moved above the bent of the trigger sear, the latter is forced by the main spring under it, and is thus able to hold the cocking lever in the cocked position. The continued motion of the cocking lever carries back the striker until the safety catch (which is above and is acted upon by the safety catch spring) is forced into the bent of the striker and retains it. The striker is thus prevented from flying forward by two actions, viz., that of the trigger sear and that of the safety catch, so that the striker cannot move forward unless both are disengaged.

Firing action.

On the crank handle returning to the latch the lock moves to the front, and the connecting rod and rear portion of actuating levers have an upward motion, so that the upper surface of the latter engages the tail end of the safety catch and lifts it clear of the striker when the lock is in the forward position, the striker then moves slightly to the front till it is stopped by the bent of the cocking lever engaging the bent of the trigger sear. If now the trigger lever in the trigger bracket is pulled, the trigger bar is drawn backwards, at the same time a projection on the latter engages and draws with it the tail end of the trigger sear, thereby releasing the cocking lever, the mainspring then propels the striker on to the cap and explodes the cartridge.* If the gun has been set for automatic fire and the pressure on the trigger is maintained as the lock moves forward, the lower end of the trigger sear comes in contact with the projection on the trigger bar, and its bent is thus withdrawn from the cocking lever before the extractor has quite reached the firing position; the striker is therefore held only by the safety catch, and when the latter is lifted by the rear end of the actuating lever, the striker is released and is thrown forward on to the cap by the action of the mainspring. The release of the safety catch from the striker is so timed that it cannot take place until the lock is in the firing position.

Points before
firing.

Points to be attended to before firing:—

- (a) Examine the barrel and see that the bore is clear.
- (b) See that the hydraulic buffer contains the proper amount of liquid (glycerine and water in equal parts); this can be tested by removing the filling plug at the upper side of the cylinder, the liquid should be up to the edge of the filling hole.

* Outside the trigger sear a guard is fitted which prevents the possibility of its being accidentally pulled when the lock is being removed or after it has been removed from the gun.

- (c) See that the barrel case is filled with water.
- (d) Work the mechanism several times by means of the crank lever, releasing the striker each time, and see that all parts work smoothly and correctly.
- (e) Examine the ammunition and see that it is of the proper description, that the belts are correctly filled with it and packed carefully in the ammunition belt boxes, the shells pointing towards the muzzle. To fill an ammunition belt by hand, insert the cartridge in the loop from the thin edge and pass it through until the front copper ring is flush with the front or thick edge of the belt. To pack a belt in the ammunition belt box, place the box so that the lid can be drawn to the right, press the locking spring and draw out the lid, then, with shells to the front, lay the belt in layers in the box, taking care to fit them tightly, and well up to both ends, then replace the lid. If the foresight is fitted with a cap, see that the latter is removed.

To fill an ammunition belt.

To pack a belt in an ammunition belt box.

Points to be attended to during firing :—

- (a) See that a sufficient supply of water is kept in the barrel case, so that the barrel should *never* be uncovered.

Points during firing.
- (b) To load the gun, insert the ammunition belt in the feed block, turn the crank lever fully to the front, pull the belt through the feed block to the left as far as it will go and release the crank lever, then turn crank lever to the front again, pull the belt a second time, and on releasing the crank lever the gun is loaded and ready for firing.

To load the gun.
- (c) That the right hand is kept clear of the crank lever to avoid risk of injury.
- (d) That the regulator lever is always in the "safe" position, except while the gun is actually being fired.
- (e) That the belt is on no account to be pulled while the gun is firing.

Points to be attended to after firing :—

- (a) That the regulator lever is turned to "safe," that the gun is unloaded, and that no cartridges are left in the ejector tube. To unload the gun, turn the crank lever fully to the front, and release it, again turn it to the front, and release it; this leaves the barrel and extractor empty, and if the lock be now drawn back till the horns of the extractor are caught by the cam pawls, then any cartridge left in the ejector tube can be withdrawn by hand.

Points after firing.
- (b) That the interior of the barrel is oiled *immediately* after firing, to prevent erosion.

To unload the gun.
- (c) That the water is removed from the barrel case, which is quickly done by removing the emptying plug.

To guard against rust and erosion.
- (d) That the main spring is released.
- (e) That the lock is taken out, cleaned and oiled, and that the extractor, striker, and springs are examined to see they are not damaged.

N.B.—It will not be necessary to strip the lock for this.

- (f) The gun should be covered, to protect it from salt water, rain, &c.

FAILURES THAT MAY OCCUR, AND HOW TO REMEDY THEM.

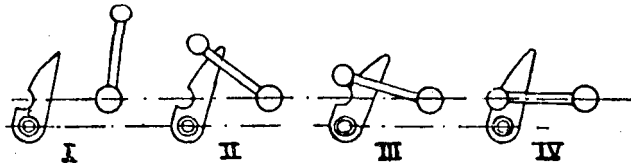
Accidental stoppages in the automatic action of the gun are generally due to either:—

Position of
lock on
occurrence
of failures.

- I. Inability of the lock to come back far enough to allow the extractor to drop.
- II. Inability of the lock to come right forward after recoil.
- III. Extractor being unable to rise to its highest position although the lock is almost home.
- IV. Failure to fire the cartridge, or to get sufficient recoil from it if ignited, although the lock has gone correctly into the forward position.

In each of the above cases it is seen therefore that the lock and extractor are arrested in different positions, and as these are exactly indicated by the crank handle, the position of the latter should be carefully observed directly a stoppage occurs.

To assist in doing this, diagrammatic sketches are given, which show approximately the position of the crank handle in each of the above four cases.



Probable
causes of
failure.

The causes of failure are probably:—

- I. Too much weight on the crank spring, want of oil, or a light charge.
- II. Obstruction in chamber or defective ammunition.
- III. (a) Too little weight on the crank spring.
(b) Want of oil.
(c) Damaged lock.
(d) Fault in feed.
- IV. (a) Missfire.
(b) Empty cartridge or one with a loose projectile.

The above may be remedied as follows:—

First case.

Heavy crank
spring.

Want of oil.

Second case.

Third case.

I. There is no need to open the cover, simply bring the crank handle fully forward and release it, then all is ready for firing. If the stoppage is repeated the crank spring should be lightened as previously described, taking care to see that the regulator lever is at "safe."

If this stoppage recurs with the crank spring at minimum weight, the cover should be opened and the bearings and working parts well oiled, the regulator lever being previously turned to the "safe" position.

II. Turn the regulator lever to "safe," open the cover, press down the extractor and turn the crank handle over to the front, jerking it up by force if necessary, raise the lock and examine the chamber to see if there is any obstruction in it, and also the cartridges in the extractor to see if any are damaged.

III. First remove finger from trigger lever, then without opening the cover, strike the crank lever sharply with the right hand to send it

home, taking care to remove the hand from the handle instantly; if this is easily done, and then on again pulling the trigger the same stoppage recurs after firing a few rounds, it will be advisable to turn the regulator lever to the "safe" position and to increase the weight of the crank spring.

Light crank spring.

If this stoppage recurs with the spring at maximum weight, the regulator lever should be turned to the "safe" position, the cover opened, and the bearings and working parts well oiled.

Want of oil.

If the gun again fails similarly, the lock should be removed for examination and replaced by the spare one.

Damaged lock.

Should it be found when this stoppage occurs that the crank lever cannot be easily sent home by a blow from the hand, then turn the regulator lever to the "safe" position, open the cover, and look at the face of feed block, when it will probably be seen that the cartridges have not been properly fed up. Now feel the belt in the feed block to see whether it is loose or jammed; if the former, it can probably be adjusted by pulling the belt to the left front; but should it be tightly fixed with the cartridges fed crossways, withdraw the lock (taking care to press down the extractor while doing so), raise it, and clear it of cartridges; next replace the lock and fix it as follows:—Turn crank lever to the front until the cam pawls engage the horns of the extractor, then let go the crank lever and the lock will now be found fixed so that on pulling the crank lever to the rear the recoiling portion is drawn back and the actuating levers in the feed block are moved to the right, thereby releasing the pressure on the belt, so that by pulling the latter to the left front the next cartridge can usually be correctly brought into position; then close the cover, turn the crank lever fully to the front, and let it go; then on turning the crank lever again to the front, and pulling the belt to the left, all is ready for firing.

Fault in feed.

How to move recoiling portion by means of crank handle.

A jam in the feed block can usually be readily recognised without opening the cover, as in that case the recoiling portion is prevented from going right forward, and so a space can be clearly seen between the front of the crank bearing and the end of the slot in breech case.

How to recognise a jam in the feed block.

If it is found that the feed is correct but that the crank lever cannot be sent home, the lock should be removed for examination, and if necessary replaced by the spare one, care being taken that the regulator lever is previously placed in the "safe" position.

It may be added that the plan of fixing the lock and moving the recoiling portion by turning the crank lever as described above, affords a ready method of oiling the bearing parts of the barrel at its most important points, viz.:—(a) Just in rear of the breech packing gland (which can be got at by removing the feed block), and (b) at the muzzle end in front of the packing gland.

IV. Turn the crank lever over fully to the front, pull the belt to the left through the feed block, and let go the lever. By this action the defective cartridge will be drawn out of the chamber and placed in the ejector tube, and a new cartridge drawn from the belt and placed in the chamber.

Fourth case. Missfire.

Missfires may occur as follows:—

Causes of missfire.

1. By a weak main spring.
2. By the firing pin in the striker being broken or worn flat on the point.
3. Lock mechanism being corroded.
4. By a defective cartridge.

In cases 1, 2, and 3, remove the lock and replace by the spare one.

Case 4 is remedied as described above.

Instructions
on occurrence
of stoppage.

If at any time a stoppage occurs during firing and it is desired to open the cover to examine the cause, first remove the finger from trigger lever, turn the regulator lever to "safe," and then allow two or three seconds to elapse before the cover is opened. If it is seen that the extractor is not quite up, no attempt should be made to raise it. On the contrary, the extractor should first be pushed down before the crank lever is turned over to the front to draw the lock back, as by this means all risk of firing a cartridge accidentally is avoided.

Parts to be
oiled.

To keep the gun in working order.—Before coming into action the surfaces on which all movable parts work should be thoroughly cleaned and well oiled, especially the following:—

- (a) Bearing parts of barrel and all recoiling portions.
- (b) The lock guides on the recoil plates, also the working parts on the lock itself, especially the levers and extractor.
- (c) Face of feed block and the edges of steel guides inside the feed block.
- (d) Bearings of the crank as far as they can be reached without stripping the gun.

Protection
during frosty
weather.

In order to prevent freezing of the water in the barrel case, blankets or other thick covering should be put over the gun in frosty weather.

Testing the
working of
recoiling
portion.

In order to see that the recoiling portion works freely, turn the crank lever to the front until the pawls on the inside cams engage the horns of the extractor, thereby holding the lock back, then pull the crank lever to the rear (using a lever if necessary) and by this means move the recoiling portion backwards to see that it works correctly and can take its full travel.

Testing
weight of
crank spring.

Weigh the crank spring with a spring balance as follows:—Place the loop of the spring balance over the handle of the crank lever and pull the balance vertically upwards, the reading indicated when the crank lever commences to move will be the weight in lbs. of the crank spring. This weight should be between 26 lbs. and 30 lbs.,* and care should be taken when weighing to see that the lock works quite freely, and that the extractor is empty. If the spring is over, or not up to weight, it can be adjusted by removing the securing screw from the spring case as described above, and then turn the case so as to either unwind or wind up the spring; as a rule a shift of one hole (*i.e.*, a quarter turn) makes a difference of about 2 lbs. Turning the case clockwise increases the weight, and counter-clockwise decreases it.

Renewing
packing at
breech end of
barrel case.

Should the barrel case leak at the breech, remove the feed block; then tighten up the breech packing gland by means of the wrench, B, provided for that purpose; but if the gland is quite home and the leakage continues, it should be unscrewed, some more packing, lubricated with oil, inserted, and the gland replaced and screwed up.

Renewing
packing at
muzzle end of
barrel case.

Should the barrel case leak at the muzzle, tighten up the muzzle packing gland, but if the leakage still continues when the gland is flush with the front edge of the stuffing box, then the gland should be removed, fresh asbestos packing, moistened with oil, inserted in

* 28 lbs. is a good average weight, but whatever weight is found most suitable should be employed.

the muzzle stuffing box, and the gland replaced and tightened up. Care should, however, be taken that the asbestos packing does not press so tightly against the barrel as to cause it to jam; this should be tested as described already, by seeing if the recoiling portion can be moved right back when the gun is horizontal. If the packing is found to press so hard on the barrel as to prevent this being done, the gland should be removed and some of the asbestos packing taken out.

A spare lock is supplied with each gun, so that if any part, such as a main spring or striker, &c., becomes defective during firing, the lock can be removed and replaced by the spare one. Objects of spare lock.

GENERAL INSTRUCTIONS.

To remove the lock.—Take out the cover securing pin, open the cover, turn the crank lever to the front, and see that the extractor drops, then take hold of the top of the lock frame and raise the lock, allowing the crank lever to come slowly back; then if there are any live cartridges in the extractor remove them (while the latter is almost fully down), give the lock one-sixth of a turn either way so as to disengage it from the connecting rod, and lift it out.

To remove and replace the lock.

When the lock is out of the gun, and it is necessary to release the main spring, great care should be taken, before doing so, to see that the extractor is at the highest point.

To replace the lock.—See that the connecting rod is upright, then holding the lock one-sixth of a turn to either side, place the rear end of the actuating lever over the connecting rod as far as it will go, turn the lock to the front and lower it into the breech case while moving the crank lever forward; see that the lock flanges are engaging in their guides in the recoil plates, and let go the crank lever.

To remove feed block.—Open the cover, the feed block can then be lifted out by pulling it vertically upwards.

To remove and replace the feed block.

To replace feed block.—Open the cover, and force the feed block downwards into position, taking care that the feed block slide is well over to the left, so that the stud on the crank lever engages with the recess in the barrel.

To remove the crank spring case.—By means of the special wrench hold the spring case firmly, taking the weight of the spring off the securing screws, then remove the securing screws, steadily turning the box in a counter-clockwise direction until the spring is completely unwound; the latter can then be detached from the hook in the crank and the case can be removed.

To remove and replace the crank spring case.

To replace the crank spring case.—Reverse the foregoing operations.

To remove the barrel.—Open the cover and remove the lock; unwind the crank spring so as to take the strain off the crank, remove the right and left slides, the buffer block, and the muzzle stuffing box. Insert the cleaning rod into the barrel from the breech, remove the nut at the other end of it, and place the barrel nut spanner over the cleaning rod, allowing the end of the latter to pass through the hole in front portion of spanner, and push in the spanner until the projections on it engage in the corresponding notches on the barrel nut, then replace the nut on the cleaning rod and screw it up against the spanner, then by turning the spanner and loosening the cleaning

To remove and replace the barrel.

rod nut, the barrel nut is unscrewed and the barrel spring is gradually released; the barrel, together with the recoil plates, can now be drawn out to the rear

To replace the barrel.—Reverse the foregoing operations.

N.B.—To avoid risk of injury, care should be taken not to stand in front of the muzzle when screwing up or releasing the barrel spring.

To remove
and replace
the ammuni-
tion box
bracket.

To remove the ammunition box bracket.—Catch hold of the springs at the ends of the arms, put both away from the studs and at the same time lift the bracket with the knee until the studs are opposite the large recesses in the slots at the ends of the arms; the bracket can then be pulled off its studs and removed from the gun.

To replace the ammunition box bracket.—Reverse the foregoing operations.

INSTRUCTIONS FOR STRIPPING AND ASSEMBLING THE GUN.

The gun, or its parts, should only be stripped at the periodical examination, unless it is otherwise absolutely necessary; and the work should *only be done by a thoroughly trained and qualified man.*

TO STRIP THE GUN.*

Remove the ammunition box bracket.

Remove the tangent sight and see that the cap is on the foresight.

Take out the cover securing pin.

Drive out the keep pin of the cover joint pin, remove collar and joint pin, and take off cover.

Remove feed block, lock, and crank-spring case.

Drive out the taper fixing pin (from the left) at the rear end of the breech case; take hold of the trigger bracket and lift slightly, strike the top edges of the side plates alternately with a wooden mallet, and the buffer block will lift out.

Drive out the keep pin from the roller nut, remove the nut, roller, and latch.

Pull out the right and left slides.

Remove the muzzle stuffing box and packing gland, then unscrew and take out the barrel nut by means of the special spanner, remove barrel spring and washer, draw out the barrel from the rear, and detach it from the recoil plates.

Unscrew and remove the steam tube.

Place the barrel case on a box or bench with the breech case clear of the box; drive out the taper fixing pin (from the left) at the front end of the breech case, and give the top edges of the side plates a few taps with a wooden mallet (holding the weight at the same time), the side plates will slide down the dovetail projections and become detached from the barrel case.

TO ASSEMBLE THE GUN.

Reverse the foregoing operations, taking care, when replacing the buffer block, to see that the grooves at the end of the piston rod are

* In all operations of stripping and assembling, pins are invariably driven out from the left and inserted from the right.

engaging properly in the recesses which are cut for them in the cross-bar at the rear of the recoil plates.

TO STRIP THE FEED BLOCK.

Unscrew crank lever fixing screw, and remove crank lever and slide.

Drive out axis pin of actuating levers, and remove the actuating levers and spring.

Drive out axis pin of retaining levers, and remove the retaining levers and spring.

TO ASSEMBLE THE FEED BLOCK.

Reverse the foregoing operations.

TO STRIP THE HYDRAULIC BUFFER.

Unscrew and remove the buffer case at the rear of buffer block.

Unscrew and remove the gland and take out the leather washer, ring, and piston.

TO ASSEMBLE THE HYDRAULIC BUFFER.

Reverse the foregoing operations, taking care, when replacing the piston, to see that the grooves at the end of the piston rod are engaging properly in the recesses which are cut for them in the crossbar at the rear of the recoil plates.

N.B.—It is advisable, in order to make better joints between the various parts, to smear over the threads of the screwed portions with a very thin layer of tallow before assembling them. If tallow is not available, vaseline would answer nearly as well.

TO FILL THE HYDRAULIC BUFFER WHEN IN THE GUN.

Remove the filling plug at the rear of the cylinder, then fill the cylinder at the filling hole until it runs over. Allow the liquid to overflow for a short time so that any air which has been poured in with the liquid may escape, and then replace the filling plug. The recoil of the gun should now be tested to make sure that the piston is able to travel right back.

TO STRIP THE LOCK.

See that the lock is cocked and the extractor at its lowest position.

Drive out the pin securing the trigger sear guard.

Remove the trigger sear guard, raise the extractor to the highest position, and release the main spring.

Drive out axis pin for the extractor levers and remove extractor levers and main spring.

Drive out the axis pins for trigger sear and cocking lever, and remove trigger sear and cocking lever.

Drive out axis pin for actuating levers, and remove the actuating levers and striker.

Drive out the safety catch axis pin, and remove the safety catch with spring.

Remove the extractor, push out gib spring cover, and take out gib spring and gib.

TO ASSEMBLE THE LOCK.

Reverse the foregoing operations.

TO CHANGE THE MARK I FIRING PIN.

Take the special D-shaped drift and insert the thin end with the flat to the front into the round hole on the top of the striker. Drive the drift right through. This loosens the firing pin, which can then be easily removed. Now take a new firing pin, and having placed it point first in the hollow end of the punch used for driving out the lock axis pins, insert the stem into the hole in front of the striker, give the punch a slight blow with a hammer, and the firing pin will then be found firmly fixed.

TO CHANGE THE MARK II FIRING PIN.

To remove
the firing pin
from the
striker.

Take the special punch and insert the V-shaped end in the round hole on the upper side of the striker, with the V to the front, then with a mallet carefully drive in the punch and partially force out the firing pin. Withdraw the punch and pass it over the front end of the firing pin, sliding the slotted part of the punch under the shoulder of the pin, when the latter can be withdrawn from the striker.

To insert the
firing pin.

Place the barbed end of the firing pin in the front end of the striker with the slot in line with the round hole on the upper side, then with a mallet carefully drive in the firing pin until the shoulder on the latter comes against the front end of the striker.

CARRIAGE, FIELD, Q.F., 1-PR., MARK I.

(Plates V and VII.)

The carriage consists of two side brackets, crosshead, with elevating and traversing gears, mounted on an axletree having third class arms, and two field wheels.

The side brackets are connected by a crosshead socket, four transoms, and the plate portion of the trail eye (No. 30), which is of gunmetal, to which is fitted a small steel spade, to give stability and to check the recoil, and a socket to receive a traversing handspike. On each side of the trail a handle is provided to facilitate limbering up. To each side bracket is bolted a steel stay, the front end of which is secured to the axletree by a fixing pin. The gunmetal crosshead socket, which is formed to receive the lower portion of the crosshead, is also bored transversely to receive the axletree, and has a projecting arm on each side through which the axletree passes and to which it is secured by fixing pins.

The elevating gear consists of a handwheel working an inner and outer screw, the latter passing through a sleeve provided with a clamping screw, one end of which is formed as a handle, so that the gear can be fixed in any required position; the upper portion of the

screw is fitted with a T head, through which passes the elevating joint pin which secures it to the breech end of the gun.

The traversing gear consists of an arm of the crosshead which projects to the rear, and is provided with a clamping screw, which passes through a steel slotted arc fitted between the side brackets, which, when tightened up, fixes the traversing arm to the arc.

With the carriage on horizontal ground, 16° elevation, 10° depression, and 30° traverse can be obtained.

Between the side brackets is fitted a steel box with a hinged cover, to receive the following stores:—

- 1 lock.
- 1 tangent sight.
- 1 spanner (No. 1 or 2).
- 3 punches.
- 1 oil can.
- 1 spring balance.
- 1 linch pin.
- 1 drag washer.
- 1 leather tie.

On the left side of the trail is a leather fitting to take a cleaning rod, and on the right is a fitting for the traversing handspike when travelling.

The crosshead is of gunmetal, the lower portion forms a pivot which fits in the gunmetal socket in the front part of trail, and is secured thereto by a nut screwed on from underneath, which is prevented from turning by a split pin passing through it. The crosshead is provided with trunnion bearings, in which the trunnions of the gun are secured by capsquares, which slide in position and are fixed by small vice screws.

The axletree is 3rd class, B, No. 49.

The wheels are 3rd class, B, No. 54,* 4 feet 4 inches in diameter, with oak spokes, ash felloes, and phosphor-bronze pipe boxes; the track is 5 feet 2 inches.

The stores carried on the carriage are detailed at p. 42.

CARRIAGE, FIELD, Q.F., 1-PR., MARK II.

(Plate VI.)

The carriage is generally similar to the Mark I, but differs in having side brackets of stronger pattern, a stronger axletree, a steel crosshead and crosshead socket, a steel trail eye (No. 31), and being fitted with brake gear, and a hinged traversing handspike.

The brake consists of two brake arms, each pivoted to the side brackets of the carriage, two brake rods, and a rocking lever. Each brake arm is fitted at its outer end with a cast iron brake block, which acts on the wheel. The arms are actuated from the front of the carriage by means of a handle attached to the left brake rod.

The axletree is 3rd class, B, No. 47.

The wheels are 3rd class, B, No. 158, 4 feet 8 inches diameter, with 2½-inch tire, and a steel nave.

The carriage is provided with locking plates, and two leather pockets. The stores carried on the carriage are detailed at p. 42.

* No. 158 will be issued in future.

A shield of steel plate, rectangular in form, is supplied with each carriage, and is secured to the gun when in action. When travelling, the shield is carried on top of the limber box.

A bracket for ammunition box is attached to the gun in action for holding the box from which the gun is fed; the box is held in position by a spring.

LIMBER, FIELD, Q.F., 1-PR., MARK I.

(Plate VII.)

The limber consists of a steel box on an angle-iron frame, supported on two springs above the axletree. The interior is formed into six compartments, each of which holds two ammunition belt boxes, access to which is obtained by opening a pair of hinged doors at the rear. On the top is fitted a hinged seat, and on each side is a guard rail, a back board being fitted across the limber box, bolted to the back of each rail. Also on the top is a steel fitting for holding a wedge, which is used to secure the shield when travelling. A hook is fitted at the rear to receive the carriage trail eye, which is secured in the usual way by means of a loose key. The limber has a foot-board, on which is carried the spare part box; fittings are also provided to carry the entrenching tools, water tanks, and other accessories.

The splinter bar is of trough shaped steel plate, filled in with wood, it is fitted with hooks and eyes to take the swingletrees, and also at the ends with drag eyes for attaching the trace hooks in case the drag hooks or swingletrees should be damaged.

The limber is constructed for pole draught; the pole (No. 16) is connected direct to the axle and supported by a bracket on the splinter bar, and a supporting bar (No. 1).

The axletree is 3rd Class, B, No. 50.

The wheels are the same as for the carriage.

The stores carried on the limber are detailed at p. 43.

LIMBER, FIELD, Q.F., 1-PR., MARK II.

(Plate VIII.)

The limber consists of a steel frame, a 3rd class axletree, limber hook, pole, with pole bar, two swingletrees, an ammunition box, and two field wheels.

The frame is of angle steel, strengthened with steel stays, a trough-shaped steel splinter bar, filled in with wood, is fitted at the front, and the limber hook at the rear.

The axletree is 3rd class, B, No. 48.

The wheels are the same as for the carriage.

The fittings for draught consist of a pole, 12 feet $1\frac{1}{2}$ inches long (No. 15), two swingletrees (No. 10A), and a supporting bar (No. 1).

The ammunition box is of wood, strengthened by steel bands; it is fitted with a hinged seat and guard irons, and has two lids, opening at the top to the right and left. To open the lids the hinged seat must first be raised. The interior is divided into six compartments, five having loose wood covers and arranged to carry 100 rounds of

ammunition, the other to carry two ammunition belt boxes. At the front of the box, immediately under the seat, two compartments are formed for carrying—on the near side—a 3-lb. grease box, two water tanks, and a can for spare buffer liquid—on the off side—a box for spare parts and tools.

The stores carried on the limber are detailed at p. 43.

AVERAGE WEIGHTS.

(Without personal equipment or any Nos. of detachment.)

| | | Mark I. | | | Mark II. | | |
|------------------------------------|-------------------------------------|---------|------|------|----------|------|------|
| | | cwt. | qrs. | lbs. | cwt. | qrs. | lbs. |
| Weight of | gun | 3 | 2 | 18 | 3 | 2 | 18 |
| | water in jacket | 0 | 0 | 14 | 0 | 0 | 14 |
| | carriage | 7 | 1 | 22 | 9 | 0 | 17 |
| | ammunition belt box bracket | 0 | 1 | 0 | 0 | 1 | 0 |
| | limber { (with 12 empty belt boxes) | 11 | 2 | 4 | — | — | — |
| | 300 rounds of ammunition | 4 | 0 | 18 | 10 | 1 | 0 |
| | 400 " " " | — | — | — | 5 | 2 | 5 |
| Average total weight behind traces | | 27 | 0 | 20 | 28 | 3 | 16 |

AMMUNITION.

(Plates IX and X.)

CARTRIDGE.

The cartridge case is of solid drawn brass, slightly tapered towards the mouth and recessed at the base to take a percussion cap. The charge consists of about 1 oz. 90 grs. of cordite, size 3 $\frac{1}{4}$, placed loose in the case, with an igniter of nitrated canvas placed underneath.

PROJECTILES.

The common shell is made of cast iron, and is screwed in the head to receive a nose fuze.

The steel shell has a pointed head, and is screwed in the base to receive a base fuze.*

Both shells have a copper driving band near the base and a copper steadying band on the shoulder. A groove is turned below the driving band, into which the neck of the cartridge case is pressed.

FUZES.

The fuze for both shells is percussion, and constructed on the same principle. Each fuze is provided with a split collar, and a pellet, which contains the detonator. On the shock of discharge, the collar expands and sets back over the pellet, and then, on impact, both are thrown violently forward, so that the needle (which is fixed in the screwed cap) pierces the detonator, thus igniting the powder in the shell.

* A number of steel shells have been issued, but no more will be provided.

DIMENSIONS, WEIGHTS, BALLISTICS, &c.

| Nature. | Diameter. | | | Length (maximum). | Bursting charge. | | Weight filled and fuzed. |
|-------------------|-----------|------------------|--------------------|----------------------|---|----------|-----------------------------------|
| | Body. | Driving band. | Steadying band. | | Nature. | Weight. | |
| Common shell ... | in. 1.45 | in. 1.503 | in. 1.456 | in. 3.367 | { Pistol powder Special fine-grain powder } | grs. 340 | lb. oz. 1 0 |
| Steel shell * ... | in. 1.45 | in. 1.503 | in. 1.456 | in. 3.616 | | 200 | 1 0 |

| | | | | |
|---------------------------------------|---|-----------|------|---------------|
| | | lbs. | ozs. | grains. |
| Weight of { | Cartridge case | .. | .. | 0 |
| | Complete cartridge, with shell fuzed | .. | 1 7 | 140 (about) |
| Mean capacity of cartridge case | | = | 4.36 | cubic inches. |
| Muzzle velocity | | = | 1800 | f.s. |
| Pressure in chamber of gun .. | | about 11½ | tons | per sq. inch. |
| Perforation of wrought iron { | at muzzle | = | 2.25 | inches. |
| | at 109 yards | = | 2.08 | „ |
| | at 656 „ | = | 1.39 | „ |

MACHINE FILLING BELTS.

(Plate XI.)

The belt filling machine is designed to force home the cartridges which have been partially inserted into the pockets of the belt by hand.

It consists of a metal block with a groove on top, and a lever pivoted at the bottom rear end of the block.

The belt is laid on the top of the block with the cartridge (which has been partially inserted into a pocket) lying in the groove, with the base towards the lever. On pressing the lever towards the block, the cartridge is forced home into the belt; the latter being prevented from moving by two projections on each side of the groove. Care should be taken that the lever completes its stroke each time, or the heads of the cartridge will not be in line.

The machine is carried in a special packing chest, which also acts as a stand for the machine when in use.

Weight of chest with machine and accessories, 57 lbs.

TOOLS FOR REPAIRING BELTS.

The tools for repairing belts consist of a die and punch, and the method of use is as follows:—

Remove the damaged eyelet or strip.

Put the new eyelet in the strip, and, placing the large end of the eyelet on the die, insert the punch in the small end and expand it by light blows on the punch.

In putting strips on the belt, care must be taken to keep the wide end of the strip the correct way, as, if not, the pockets will not be correct.

* A number of steel shells have been issued, but no more will be provided.

RANGE TABLE FOR Q.F. 1-PR. GUN, MARK I.

Weight of $\left\{ \begin{array}{l} \text{Charge, about 1 oz. 90 grs. cordite.} \\ \text{Projectile, 1 lb.} \end{array} \right.$

Muzzle velocity, 1800 f.s.

| Range. | Elevation. | Angle of Descent. | Time of Flight. | Remaining Velocity. |
|--------|------------|-------------------|-----------------|---------------------|
| yards. | ° ' " | ° ' " | secs. | ft.-secs. |
| 100 | 0 11 | 0 11 | 0.17 | 1686 |
| 200 | 0 13 | 0 23 | 0.35 | 1578 |
| 300 | 0 15 | 0 32 | 0.51 | 1475 |
| 400 | 0 33 | 0 42 | 0.75 | 1378 |
| 500 | 0 42 | 0 53 | 0.98 | 1290 |
| 600 | 0 52 | 1 5 | 1.22 | 1211 |
| 700 | 1 2 | 1 19 | 1.47 | 1142 |
| 800 | 1 13 | 1 31 | 1.74 | 1083 |
| 900 | 1 24 | 1 50 | 2.03 | 1035 |
| 1000 | 1 36 | 2 7 | 2.33 | 997 |
| 1100 | 1 48 | 2 26 | 2.64 | 964 |
| 1200 | 2 1 | 2 46 | 2.96 | 933 |
| 1300 | 2 15 | 3 7 | 3.29 | 904 |
| 1400 | 2 30 | 3 29 | 3.63 | 877 |
| 1500 | 2 45 | 3 52 | 3.97 | 851 |
| 1600 | 3 1 | 4 16 | 4.32 | 826 |
| 1700 | 3 17 | 4 42 | 4.68 | 802 |
| 1800 | 3 34 | 5 9 | 5.06 | 780 |
| 1900 | 3 51 | 5 37 | 5.45 | 759 |
| 2000 | 4 9 | 6 6 | 5.86 | 738 |
| 2100 | 4 27 | 6 35 | 6.28 | 718 |
| 2200 | 4 46 | 7 5 | 6.71 | 699 |
| 2300 | 5 6 | 7 36 | 7.14 | 680 |
| 2400 | 5 26 | 8 7 | 7.58 | 662 |
| 2500 | 5 47 | 8 39 | 8.03 | 644 |
| 2600 | 6 8 | 9 12 | 8.50 | 627 |
| 2700 | 6 30 | 9 46 | 8.98 | 610 |
| 2800 | 6 52 | 10 21 | 9.48 | 593 |
| 2900 | 7 14 | 10 57 | 9.99 | 577 |
| 3000 | 7 37 | 11 33 | 10.52 | 561 |

HARNESS FOR Q.F. 1-PR. EQUIPMENT (FOR ANIMALS UNDER 15 HANDS IN HEIGHT).

(Plates XII to XV.)

The harness for use with this equipment is "N.P." Army Service Corps pattern with breast collars, but with small size driver's saddles and a strap, neck, with strap supporting pole bar, to suit animals under 15 hands in height. The sets are completed with parts of G.S. and R.A. pole draught harness and saddlery.

Three double sets will be issued for each gun, with parts special for use with wheel set.

A double set will be as follows :—

| Description of Articles. | Near. | Off. | Remarks. |
|--|-------|------|-------------------|
| HARNESS, A.S.C. | | | |
| Bands, belly | 1 | 1 | |
| Breechings, Mark II | 1 | 1 | |
| Collars, breast, Mark II.. .. . | 1 | 1 | |
| „ head | 1 | 1 | |
| Cruppers, without dock pieces | 1 | 1 | |
| Reins, bearing | 2 | 2 | |
| „ side.. .. . | — | 1 | |
| Straps, carrying, Mark II | 2 | 2 | |
| Traces, chains pairs | 1 | 1 | |
| „ hooks „ | 1 | 1 | |
| „ pieces, leather „ | 1 | 1 | |
| „ ropes „ | 1 | 1 | |
| HARNESS, G.S. | | | |
| Bits, bridoon | 1 | 1 | |
| „ Portsmouth, reversible | 1 | 1 | "S" size. |
| Blankets, saddle | 1 | 1 | |
| Cases, horse shoe, harness | 2 | 2 | |
| Girths, pattern '84 | 1 | 1 | 30-inch. |
| Irons, stirrup, G.S. | 2 | — | |
| Leathers, stirrup | 2 | — | "S" size. |
| Numnabs, felt, Mark VI.. .. . | 1 | 1 | |
| Ropes, head | 1 | 1 | |
| Runners, stirrup, leather.. .. . | 2 | — | |
| Saddles, steel arch, drivers' | 1 | 1 | "S" size. |
| Straps, baggage | — | 3 | |
| „ cloak and wallet | 2 | 2 | |
| „ „ centre | 1 | 1 | |
| „ wither, 1 inch | 1 | 1 | |
| Surcingles, leather, harness | 1 | 1 | |
| Wallets, harness, Mark V pairs | — | 1 | |
| Whips, drivers' | 1 | — | |
| HARNESS, POLE, DRAUGHT, R.A. | | | |
| Leggings, drivers' | 1 | — | |
| Hooks, crupper | 1 | 1 | |
| „ pole bar | 1 | 1 | |
| Straps, pole | 1 | 1 | } Wheel set only. |
| „ neck, with strap supporting pole bar | 1 | 1 | |

| Spare Articles. | Per team. | Remarks. |
|---------------------------|-----------|--------------------------------|
| Traces, ropes pairs | 2 | } To be carried on the limber. |
| " rings (rubber) | 12 | |
| Hook, pole bar | 1 | |
| Strap, pole.. .. | 1 | |

| | | Near. | Off. |
|--------------------------------------|----|-----------|-----------|
| | | lbs. ozs. | lbs. ozs. |
| Weight of a double set of harness .. | 69 | 3½ | 66 8 |
| Special articles for wheel set .. | 2 | 5 | 2 5 |

The harness is arranged for pole draught, and is lighter than that for R.A. pole draught. Buckles are of nickel.

Breast collars are used throughout the team.

"Rapid release" attachments have been introduced to attach the pole strap to the breast collar (the latter having had a double link added in lieu of dee for the purpose), also for the hook pole bar for "bar, supporting pole," to attach it to the double link of strap which forms part of the neck strap.

The rope of the traces is used two-fold in lead, and four-fold in wheel.

The trace is in four detachable parts as detailed in the list above.

If it is necessary to hook in additional horses to the gun, they should be attached to the splinter bar, and not to the leader's trace.

The pole strap should be first attached to the pole, and afterwards to the breast collar, and the two hooks for supporting pole bar to the bar, and then to the double link of "strap, supporting."

This order should be reversed in unhooking.

STRAP, NECK, WITH STRAP SUPPORTING POLE BAR.

This is the neck strap shown in "List of Changes," § 5,929, but modified. It is for supporting the breast collar.

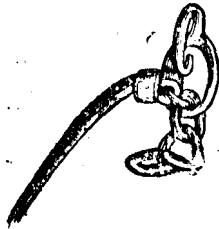
It is 38 inches in length by 3½ inches in width, and is fitted with two nickel rings.

A strap of folded leather is added for attaching to the rings of the neck strap for supporting the ends of the bar, supporting pole.* It is 29 inches in length by 2¼ inches in width fitted at each end with a 15½-inch strap and 1½-inch buckle. A double link for engaging in bent link of "hook, pole bar," is carried on the strap.

HOOK, CRUPPER.

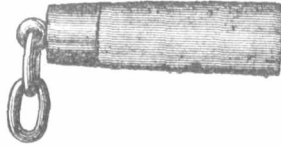
This is the pattern described in § 7,883, "List of Changes," but declared obsolete in § 9,652.

HOOK, POLE-BAR, WITH STRAP.

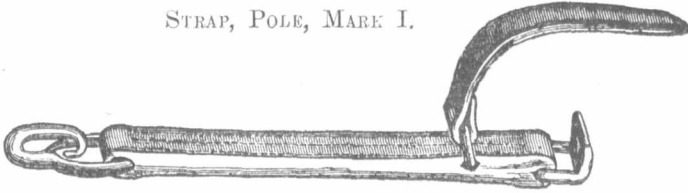


This consists of a steel hook (similar to the one in leather piece of trace), and a rapid release attachment; the former to engage in the links on the end of the "bar supporting draught pole," and the latter with the double link on "strap supporting," which is part of neck strap.

END OF BAR, SUPPORTING POLE.



STRAP, POLE, MARK I.



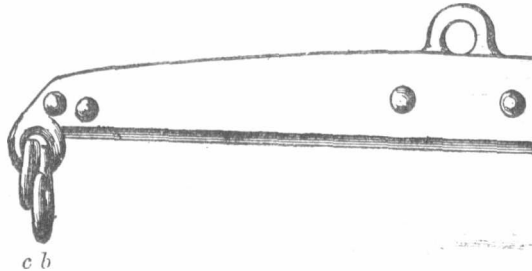
This is in place of a pole chain.

It is 14 inches in length over all, one end is fitted with a hook similar to that of the hook, pole-bar, for attaching to links on the pole and the other end with a bent link and a $10\frac{1}{4}$ -inch strap for engaging in the double link of the breast collar.

This rapid release bent link is larger and stronger than that on the hook, pole bar mentioned above.

SWINGLETREE (No. 10A).

The end is fitted with a cranked link (b) and an oval link (c); the latter is for use with the hook on the traces issued, viz., "hook with rubber ring."



COLLAR, HEAD.

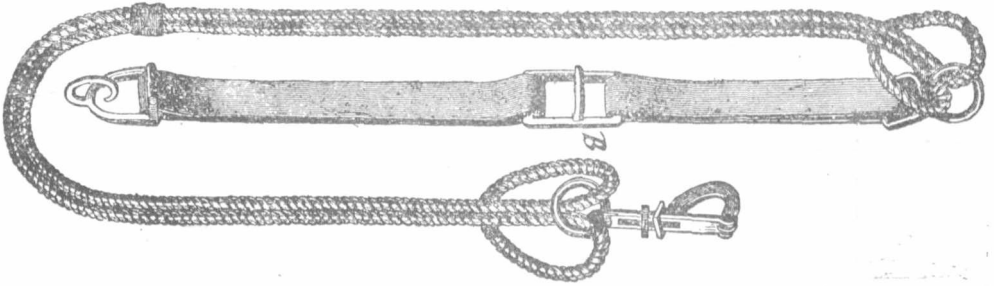
This collar has a buckle on the noseband to allow it to be shortened for small horses.

It also has a strap and buckle on each side to carry the Port-mouth bit, and is in lieu of a bridle head, but the straps are lower than the billets on the cavalry head collar, which is for a bridoon.

When a bridoon is worn, the strap will have to be attached to the bridoon rings.

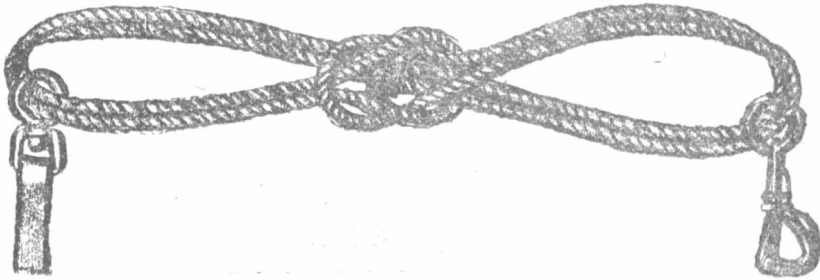
LEAD TRACE.

(Belly band is attached on the square (B).)



WHEEL TRACE.

(Rope folded.)



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INSTRUCTIONS FOR CARRYING CAPE, CLOAK, PICKET ROPES AND
PEGS, &c.*Near horse.*—The cape to be carried on front of the saddle.*Off horse.*—The cloak to be carried in front of the wallets.*Built up rope and picket peg* to be strapped securely under cloak and wallet straps, the end of strap to be afterwards passed round wallets to secure the cloak. This admits of the cloak being removed without displacing the peg and rope.

The near horse set to be strapped on near wallet.

Bridloons to be carried on the near shoe case of the off horse, the bits rolled inside reins, the end of rein being passed round the rear arch and secured to the shoe case strap.

NOTE.—Further illustrations are shown in Plates XII to XV.

These plates show the harness on 15 hands 3-inch horses, and the strap, supporting pole bar (which is part of neck strap) to be rather tightly fitted; the pole of limber in consequence (Plate XV) is rather high.

| | | | | |
|----|--|--|----|--|
| 13 | Braces, Q.F., 1-pr. | With fixed bit; for screws of ammunition boxes. | 13 | Braces for ammunition boxes. |
| 14 | Brackets, ammunition box— Q.F., 1-pr. | Gunmetal, with two box stops, two springs securing bracket, and one spring securing box. Web handle. | 14 | Brackets, box, ammunition. |
| 15 | Buckets, water, G.S., canvas.. | Without case; hinged. | 15 | Buckets, water, canvas. |
| 16 | Binoculars, Mark III.. | Leather, with sling. | 16 | Binoculars, with case and strap. |
| 17 | Cases, Mark II | Wood, for poles Nos. 15 and 16. | 17 | Bars, supporting pole. |
| 18 | Bars supporting draught pole— No. I | With fixing screw. | 18 | Bars, trigger. |
| 19 | Ordnance, Q.F., 1-pr., Mark I— Bar, trigger, breech mechanism case Bracket, trigger, breech mechanism case Crossheads, carriage, field— | Steel; with gunmetal sleeve, capsquares; two capsquare screws; securing nut, with split key; screw clamping with nut; and pin hinge elevating nut with collar and split key. | 19 | Brackets, trigger. |
| 20 | Q.F., 1-pr. | Wood; cylindrical. | 20 | Crossheads, strengthened pattern. |
| 21 | | | 21 | " old pattern. |
| 22 | | | 22 | " steel. |
| 23 | Rammers, packing gland— Q.F., 1-pr. | | 23 | Cylinders, wood, gland packing. |
| 24 | Carriage, field, Q.F., 1-pr.— Mark I. | | 24 | Carriages, gun, with new top carriage. |
| 25 | Mark II. | | 25 | " old pattern. |
| 26 | See 51. | | 26 | " new pattern. |
| 27 | Ordnance, Q.F., 1-pr., Mark I— Cams, guide, breech { left mechanism case { right | With rivets and stop stud. | 27 | Cartridge extractor. |
| 28 | Ordnance, Q.F., 1-pr., Mark I— Plate cover, breech mechanism case | With guide block; hinge joint; hinges pin with collar and keep pin; securing pin with chain and loop; foresight bracket with foresight and cap. | 28 | Cams, guide, left. |
| 29 | | Waterproof canvas. | 29 | " right. |
| 30 | | | 30 | Cover, gun. |
| 31 | Covers, gun, Q.F., 1-pr. | | 31 | " " waterproof. |

NOMENCLATURE Q.F. I-PR. EQUIPMENT—continued.

| REVISED NOMENCLATURE. | | | AS AT PRESENT IN TEMPORARY USE IN SOUTH AFRICA. | |
|-----------------------|---------------------------------------|--|---|--------------------------------------|
| Reference Number. | Designation. | Detail. | Reference Number. | Designation. |
| 32 | Can, lubricating, Q.F., 1-pr. | Steel, $\frac{1}{4}$ pint, with lever valve and removable spout, G.S. Tin, 2 $\frac{1}{4}$ pints. | 32 | Can, oil, lubricating, special size. |
| 33 | " " " No. 9 | | 33 | " " " " No. 9. |
| 34 | " " " No. 3 | | 34 | " " " " No. 3. |
| 35 | Ordnance, Q.F., 1-pr., Mark I— | With chain and loop. | 35 | Cork and plug, complete. |
| 36 | Plug cork, barrel case | | 36 | Corks for plugs. |
| 37 | Corks for plug. | | 37 | Caps, protecting foresight. |
| | Cap foresight, breech mechanism case. | Copper, tinned, with filling hole plug; tap; and leather handle. | 38 | Cans for glycerine and water. |
| | Cans, buffer, liquid— | | 39 | Cutters, wire. |
| | Q.F., 1-pr. | | 40 | Cartridges, common shell. |
| 39 | Cutters, wire, Mark II. | Fitted for nose fuze. " base " | 41 | " steel shell. |
| 40 | Cartridges, Q.F., 1-pr.— | | 42 | Crank. |
| 41 | Common shell | | 43 | Cases, luffer. |
| | Steel shell | With hinge pin, keep pin, and hook for spring. | 44 | Caris, ammunition. |
| | Ordnance, Q.F., 1-pr., Mark I— | | 45 | Drifts, brass, $\frac{3}{8}$ -inch. |
| 42 | Crank | | 46 | " " $\frac{5}{16}$ -inch. |
| 43 | Case buffer, breech mechanism case | | 47 | Drivers, screw, 10-inch. |
| 44 | Carts, Scotch. | | 48 | " " small, special. |
| 45 | Drifts, brass, $\frac{3}{8}$ -inch. | | | |
| 46 | " " $\frac{1}{2}$ -inch. | | | |
| 47 | Drivers, screw, 10-inch. | | | |
| 48 | " " G.S., 4-inch. | | | |

NOMENCLATURE Q.F. 1-PR. EQUIPMENT—continued.

| REVISED NOMENCLATURE. | | | AS AT PRESENT IN TEMPORARY USE IN SOUTH AFRICA. | |
|-----------------------|--|--|--|---|
| Reference Number. | Designation. | Detail. | Reference Number. | Designation. |
| 64 | Ordnance, Q.F., 1-pr., Mark I— | | 64 | Gland, packing, muzzle. |
| 65 | Gland, muzzle, barrel case. | | 65 | " " breech. |
| 66 | " breech | | 66 | " " buffer. |
| 67 | " buffer, breech mechanism case. | | 67 | Guns, 1-pr., Maxim, complete. |
| 68 | Ordnance, Q.F., 1-pr., Mark I. | | 68 | Harness, A.S.C., modified, double sets. |
| | Harness, A.S.C., modified for Q.F. 1-pr. equipment. | | | |
| 69 | Hammers, fitters', 16-oz. | | 69 | Hammers, 20-oz. |
| 70 | Ordnance, Q.F., 1-pr., Mark I— | | 70 | Handle, crank, with fixing pin. |
| | Lever, crank | With handle and securing screw. | | |
| 71 | Hooks, limber— | | 71 | Hooks, limber (old pattern or local). |
| | No. 22 | Q.F., 1-pr., Mark I. | | |
| | " 23 | " " II. | | |
| | Limbers, field, Q.F., 1-pr.— | | | |
| 72 | Mark I. | | 72 | Limbers, local pattern. |
| 73 | Mark II. | | 73 | " old " |
| 74 | | | 74 | " new " |
| 75 | Ordnance, Q.F., 1-pr., Mark I— | | 75 | Locks, complete. |
| | Lock, percussion | Frame, with hard steel piece and fixing screw; actuating lever with axis pin in two parts; extractor with flat spring, gib, gib spring; pawl with axis pin, spiral spring and cover; striker with removable firing pin, main spring, cocking lever with axis pin, trigger | | |

| | | | | |
|----|---|--|----|---|
| 76 | Ordnance, Q.F., 1-pr., Mark I— | sear with axis pin, two extractor levers (one left and one right) with axis pin in two parts; safety catch with axis pin and flat spring, and trigger sear guard with fixing pin. | 76 | Lock, frames. |
| 77 | Frame, percussion lock | With hard steel piece and fixing screw. | 77 | Lever, extractor (lifting levers), right, left. |
| 78 | Lever, extractor, per- cussion lock | With axis pin in two parts. | 78 | " " " |
| 79 | Lever, actuating, percussion lock .. | With securing screw. | 79 | " side. |
| 80 | Lever, regulator, breech mechanism case. | Handled. | 80 | " indicator. |
| 81 | Lever, crank, feed block— | With trunnion plate; slide with roller, nut, and keep pin; barrel stop; cam guide; pawl with hinge screw; stop stud and spring; elevating bracket; stud for shoulder-piece, and stop stud for buffer block. | 81 | top, feed block. |
| 82 | Part II | With trunnion plate; slide with roller, nut, and keep pin; barrel stop; cam guide; pawl with hinge screw; stop stud, and spring; elevating bracket: two studs for trigger bar, hook for trigger bar; spring; stud for latch; two studs for ammunition box brackets; trigger bar, and spiral spring; stop stud for buffer block; regulator, with lever and keep pin; and indicator plate. | 82 | bottom, feed block. |
| 83 | " I. | With hinge screw. | 83 | trigger. |
| 84 | Lever, trigger, breech mechanism case. | " " | 84 | Mallets, raw hide. |
| 85 | Mallet, raw hide | With hinge screw. | 85 | Plates, side, breech mechanism case, left. |
| 86 | Plates, side, breech mechanism case— | " " | 86 | Plates, side, breech mechanism case, right. |
| 87 | Left | With hinge screw. | 87 | Pawls, guide, cam, left. |
| 88 | Right | " " | 88 | " " right. |
| 89 | Pawl, guide cam, breech mechanism case { left .. right } | " " | | |

NOMENCLATURE Q.F. 1-PR. EQUIPMENT—continued.

| REVISED NOMENCLATURE. | | | AS AT PRESENT IN TEMPORARY USE IN SOUTH AFRICA. |
|-----------------------|---------------------------------------|--|---|
| Reference Number. | Designation. | Detail. | Reference Number. |
| 89 | Ordnance, Q.F., 1-pr., Mark I— | With axis pin. | <i>Pawls, gib.</i> |
| 90 | Pawl, gib, percussion lock .. | | <i>" feed block, top, front.</i> |
| 91 | Lever, actuating feed block { right. | | <i>" " rear.</i> |
| 92 | left. | | <i>" " bottom, front.</i> |
| 93 | Lever, retaining feed block { right. | | <i>" " rear.</i> |
| 94 | left. | | <i>Punches, No. 1.</i> |
| 95 | Punches (set of three). | | <i>" No. 2.</i> |
| 96 | | | <i>" No. 3.</i> |
| 97 | Pins, lynch, 3rd class. | Steel, with die (for ammunition belts). | <i>Pins, lynch, 3rd class.</i> |
| 98 | Punches, eyelets, Q.F., 1-pr. .. | | <i>Punch, with die for firing eyelets.</i> |
| 99 | Ordnance, Q.F., 1-pr., Mark I— | With removable firing pin. | <i>Packing, asbestos, large pieces.</i> |
| 100 | Packing asbestos { large. | | <i>" " small "</i> |
| 101 | Striker, percussion lock .. | | <i>Pins, firing, complete.</i> |
| 102 | Pin, firing, percussion lock. | | <i>" " points.</i> |
| 103 | Pins, axis— | Also trigger sear; also firing pin for trigger sear guard. | <i>" axis, trigger, pistol grip.</i> |
| 104 | Trigger lever, breech mechanism case. | | <i>" " sear.</i> |
| 105 | Safety catch, percussion lock. | | <i>" " pawls, feed block, top.</i> |
| 106 | Actuating levers, feed block. | | <i>" " " bottom.</i> |
| 107 | Retaining " " | | <i>" " tumbler or trigger.</i> |
| | Cocking lever, percussion lock .. | | |

| | Extractor levers, percussion lock | In two parts; also actuating lever, lock percussion. | | Pins, axis, lock spring. |
|-----|---|--|-----|----------------------------------|
| 108 | Pin, securing, cover, breech mechanism case | .. | 108 | " " cover. |
| 109 | Pin, hinge, cover, breech mechanism case | .. | 109 | " joint, " |
| 110 | Pin, hinge, cover, breech mechanism case | .. | 110 | " elevating. |
| 111 | Q.F., 1-pr. .. | .. | 111 | " crank. |
| 112 | Ordinance, Q.F., 1-pr., Mark I— | .. | 112 | " taper, securing, water jacket. |
| 113 | Pin, hinge crank .. | .. | 113 | " " rear cross piece. |
| 114 | " fixing barrel case. | .. | 114 | Pincers (carpenter's). |
| 115 | " " buffer block, breech mechanism | .. | 115 | Pistol grip. |
| 116 | Pincers, carpenter's. | .. | 116 | Poles, limber (1-pr. Maxim). |
| 117 | Poles, draught— | .. | 117 | " ammunition cart. |
| 118 | No. 16 .. | .. | 118 | Plates, recoil, right. |
| 119 | Poles, draught, Scotch cart. | .. | 119 | " " left. |
| 120 | Ordinance, Q.F., 1-pr., Mark I— | .. | 120 | Pistons. |
| 121 | Plates, recoil { right | .. | 121 | Plug, filling hole, buffer. |
| 122 | left. | .. | 122 | " " " |
| 123 | Piston, buffer, breech mechanism case. | .. | 123 | Rods, connecting. |
| 124 | Plug, buffer. | .. | 124 | " cleaning. |
| 125 | " filling and emptying, barrel case .. | .. | 125 | Ropes, drag, tight, pairs. |
| 126 | Rod, cleaning, Q.F., 1-pr. | .. | 126 | Rings, buffer. |
| 127 | Ropes, drag, light, Q.F., 1-pr. | .. | 127 | Rollers. |
| 128 | Ordinance, Q.F., 1-pr., Mark I— | .. | 128 | Roller, nuts. |
| 129 | Ring, buffer, breech mechanism case. | .. | 129 | Sights, fore. |
| 130 | Roller, breech mechanism case. | .. | 130 | " tangent. |
| 131 | Nut, roller, breech mechanism case | .. | 131 | Sights, tangent, clamps. |
| 132 | Bracket, foresight, breech mechanism case | .. | 132 | |
| | Sights, Q.F., tangent, 1-pr. .. | .. | | |
| | Socket .. | .. | | |

NOMENCLATURE Q.F. 1-PR. EQUIPMENT—continued.

| REVISED NOMENCLATURE | | | AS AT PRESENT IN TEMPORARY USE IN SOUTH AFRICA. | |
|----------------------|--|--------------------------------|--|--|
| Reference Number. | Designation. | Detail. | Reference Number. | Designation. |
| 133 | Shields, Q.F., 1-pr. | | 133 | Shield. |
| 134 | Strips, brass, ammunition belts, Q.F., 1-pr. | | 134 | Strips for belts. |
| 135 | Ordinance, Q.F., 1-pr., Mark I— Catch, safety | With axis pin and flat spring. | 135 | Sears, safety. |
| 136 | Springs— Barrel | | 136 | Springs, barrel, with washer. |
| 137 | Ejector tube, barrel case | Spiral. | 137 | " ejector tube. |
| 138 | Extractor, percussion lock | Flat. | 138 | " extractor, with rivets (tail spring). |
| 139 | Levers, retaining, feed block | " with three rivets. | 139 | " feed block. |
| 140 | " actuating | Spiral. | 140 | " " slide. |
| 141 | Trigger, breech mechanism case | Flat. | 141 | " trigger, pistol grip. |
| 142 | Main, percussion lock | Spiral. | 142 | " lock. |
| 143 | Pawl, cam guide, breech mechanism case | Flat. | 143 | " pawl, guide cam. |
| 144 | Safety catch, percussion lock | " | 144 | " sear. |
| 145 | Recoil plate | " with three rivets. | 145 | " side plate, with rivets. |
| 146 | Gib, percussion lock | " | 146 | " gib. |
| 147 | Socket, tangent sight | " | 147 | " tangent sight. |
| 148 | Milled head, tangent sight | " | 148 | " " gib. |
| 149 | Trigger bar, breech mechanism case | " | 149 | " trigger bar. |
| 150 | Gib pawl, percussion lock | Spiral. | 150 | " gib, pawl. |
| 151 | Crank | " Helical. | 151 | " clock, actuating lock. |

| | | | | | |
|-----|-----|---|---|--|--------------------------------------|
| 152 | 152 | Spring, limber— Mark I, Q.F., 1-pr. " II, " " Wrenches, Q.F., 1-pr.— B. C. A. | | | Spring, limber (1-pr. Marine). |
| 153 | 153 | Spanner, McMahon, 15-inch. | | | Spanners, stuffing box, gland. |
| 154 | 154 | Implement, fuze, shell, and cartridge— Spanner, fuze, Q.F., 1-pr. | Steel. | | " cleaning rod. |
| 155 | 155 | Swingletrees, No. 10A | " | | " barrel nut. |
| 156 | 156 | " Scotch cart. | | | " McMahon, 15-inch. |
| 157 | 157 | Ordnance, Q.F., 1-pr., Mark I— Slide, feed block. | | | " small, for fuze. |
| 158 | 158 | Box, stuffing, muzzle, barrel case. | | | Swingletrees, No. 10A. |
| 159 | 159 | Screw, set, crank spring case. | | | " for ammunition carts. |
| 160 | 160 | " fixing, ejector tube spring. | | | Slide, feed block. |
| 161 | 161 | " " trigger bracket. | | | Stuffing, box, muzzle. |
| 162 | 162 | " hinge, cam pawl. | | | Screws, securing, clock, spring box. |
| 163 | 163 | Shoulder-piece | With indiarubber pad and fixing screw with retaining nut. | | " " ejector tube. |
| 164 | 164 | | With rivets. | | " " trigger, pistol grip. |
| 165 | 165 | | | | " " pawl, guide cam. |
| 166 | 166 | | | | Shoulder pieces. |
| 167 | 167 | Plate, trunnion, breech mechanism case | | | Studs, trunnion. |
| 168 | 168 | Screw, securing, crank lever feed block. | | | Screws, fixing top lever feed block. |
| 169 | 169 | Plates, holding down belt filling machine, Q.F., 1-pr. | Gunmetal, with fixing screws. | | Sockets for belt-filling machines. |
| 170 | 170 | Ordnance, Q.F., 1-pr., Mark I— Bracket, tangent sight, breech mechanism case. | | | Sockets, tangent sight. |
| 171 | 171 | Tube, steam, barrel case | With front and rear plugs, and slide valve. | | Tube, steam, with valve. |
| 172 | 172 | Tube, ejector, barrel case. | | | Tube, ejector. |
| 173 | 173 | Link, connecting, trigger, breech mechanism case | With axis pin. | | Trigger, connector. |
| 174 | 174 | Trigger-scar, percussion lock. | | | " hand scar. |
| 175 | 175 | See 83. | | | " pistol grip (see 83). |
| 176 | 176 | Lever, cocking, percussion lock | With axis pin. | | Tumblers. |

NOMENCLATURE Q.F. 1-PR. EQUIPMENT—continued.

| REVISED NOMENCLATURE. | | | AS AT PRESENT IN TEMPORARY USE IN SOUTH AFRICA. | |
|-----------------------|---|---|---|---------------------------------------|
| Reference Number. | Designation. | Detail. | Reference Number. | Designation. |
| 177 | Tanks, water, Q.F., 1-pr. | Steel, galvanised, with filling hole plug. | 177 | <i>Tanks, cylindrical, for water.</i> |
| 178 | Eyes, trail— No. 30 | | 178 | <i>Trail eyes.</i> |
| 179 | " 31 | | 179 | <i>Trigger bars (see 18).</i> |
| 180 | See 18. | | 180 | <i>Tie pieces.</i> |
| | Ties, lynch pin. | Leather. | | |
| 181 | Ordnance, Q.F., 1-pr., Mark I— Washer, gland, breech mechanism case. | Brass. | 181 | <i>Washers, cup, dermatine.</i> |
| 182 | Vessels, water, Q.F., 1-pr. | | 182 | <i>Water vessel, brass.</i> |
| 183 | Wheels, 3rd class B, Nos. 52, 54, or 158. | | 183 | <i>Wheels, No. 54, 52, or 158.</i> |
| 184 | Wheels, Scotch cart. | | 184 | <i>" for ammunition carts.</i> |
| | Ordnance, Q.F., 1-pr., Mark I— Case, barrel | With cap; steam tube with front and rear plugs, and slide valve; muzzle stuffing box and gland; breech gland; ejector tube, spring and fixing screw; washer; one filling and one emptying plug, each with chain, two loops, and eye-bolt; cork plug with chain and loop and fixing pin. | | |
| 185 | | | 185 | <i>Water jackets.</i> |

DRILL FOR 1-PR. Q.F GUN

ARRANGEMENT.

THE DETACHMENT—

To Tell Off.
 Detachment Rear.
 To form Detachment Rear in Action.
 To take Post from Detachment Rear in Action.
 Position of Order of March.
 To form the Order of March from Detachment Rear
 To form Detachment Rear from the Order of March.
 To move the Gun with Drag Ropes.
 To move the Gun without Drag Ropes

PREPARATION FOR ACTION.

ACTION.

DUTIES.

REGULATOR LEVER.

MISSFIRE.

TO STAND FAST.

WAGON SUPPLY.

TO CEASE FIRING.

TO LIMBER UP.

FIRE DISCIPLINE.

TO PUT THE GUN OUT OF ACTION.

TO PERMANENTLY DAMAGE THE GUN.

THE DETACHMENT.

The detachment consists of seven men, who fall in two deep one pace between ranks, 1 on the right of the front rank.

TO TELL OFF.

Section Commander.

1.

.... Section—Tell off.

At the order from the Section Commander—1 numbers 1; the right hand man of the rear rank numbers 2; the right hand man of the front rank 3; the second man from the right of the rear rank 4; his front rank man 5; and so on.

DETACHMENT REAR.

Formed as above, three yards in rear of the gun wheels, 1 covering the off wheel.

TO FORM DETACHMENT REAR IN ACTION.

| | |
|-------------------------------|------------------------|
| <i>Section Commander.</i> | <u>1.</u> |
| Section—Detachment Rear. | No. Double March. |

At the order from the Section Commander—1 doubles to his place and gives the order "Double March."

At the order from 1—The remainder double to their places by the shortest way and halt.

TO TAKE POST FROM DETACHMENT REAR IN ACTION.

| | |
|---------------------------|------------------------|
| <i>Section Commander.</i> | <u>1.</u> |
| Section—Take Post. | No. Double March. |

At the order from 1—The remainder double to their places.

POSITION OF THE ORDER OF MARCH.

1 on his horse—at dismounted drill he will place himself in line with the point of the pole on the near side.

2 and 3 in line with the axletree of the limber.

4 " 5 " " gun carriage.

6 and 7 with the wagon.

Even numbers on the near side, odd numbers on the off.

TO FORM THE ORDER OF MARCH FROM DETACHMENT REAR.

| | |
|---------------------------------------|------------------------|
| <i>Section Commander.</i> | <u>1.</u> |
| Section—Form the Order of March. | No. Double March. |

At the order from the Section Commander—1 doubles to his place and gives the order "Double March."

At the order from 1—The remainder double to their places by the shortest way and halt.

TO FORM DETACHMENT REAR FROM THE ORDER OF MARCH.

| | |
|-------------------------------|------------------------|
| <i>Section Commander.</i> | <u>1.</u> |
| Section—Detachment Rear. | No. Double March. |

At the order from the Section Commander—1 doubles to his place and gives the order "Double March."

At the order from 1—The remainder double to their places by the shortest way and halt.

TO MOVE THE GUN WITH DRAG ROPES.

| | |
|-------------------------------|-----------|
| <u>Section Commander.</u> | <u>1.</u> |
| Section—With drag ropes. | |
| Prepare to Advance. | |

At the order from the Section Commander—2 and 3 hook the drag ropes to the gun wheel washers, the two highest numbers go to the pole, the remainder man the ropes, even numbers on the near side, odd on the off.

TO MOVE THE GUN WITHOUT DRAG ROPES.

| | |
|----------------------------------|-----------|
| <u>Section Commander.</u> | <u>1.</u> |
| Section—Without drag ropes. | |
| Prepare to Advance. | |

At the order from the Section Commander—2 and 3 push between muzzle and wheels; 4 and 5 man the gun wheels; the two highest numbers go to the pole, and the remainder assist.

PREPARATION FOR ACTION.

| | |
|----------------------------------|-----------|
| <u>Section Commander.</u> | <u>1.</u> |
| Section—Prepare for Action. | |

At the order from the Section Commander—1 and the detachment dismount, and

1 examines the barrel and sees that the bore is clear, and that the hydraulic buffer and water jacket are properly filled; works the mechanism by means of the crank lever to see that it is in good order, releasing the striker each time; sees that the "Regulator" is at "Safe," and superintends the other numbers.

2 removes the foresight protector, sees that the sights and elevating and traversing gears are in good order.

3 examines the bracket and feed block.

4 examines the limber, sees that the ammunition is properly packed in the belt boxes—the shells pointing towards the muzzle.

The men with the wagon examine the ammunition in the wagon.

Any deficiencies in the limber are made up from the wagon, under the direction of 1.

On completion of the above, the detachment mount without further orders.

ACTION.

| | |
|----------------------------|------------------------|
| <u>Section Commander.</u> | <u>1.</u> |
| Section—Action front. | No. Action front. |

At the order from 1—

The detachment dismount, 3 unkeys, and with 2 lifts the trail eye off the limber hook; when clear of the hook, 3 gives "Limber drive on."

2 and 3 carry round the trail a half circle to the left, 2 shifting round the trail eye to avoid walking backwards, and lower it to the ground.

The limber moves as detailed in "Field Artillery Training."

As soon as the trail has been lowered to the ground—

1 ships the handspike, loads, lays for direction, and points out the target to 2.

2 assists to load, unclamps the elevating and traversing gears; places his left shoulder against the shoulder piece, taking hold of it with his left hand; works the elevating gear with his right hand, and, when the gun is layed, places his right hand on the pistol grip ready to fire.

3 places a belt in the belt box on the gun, and passes the end of it through the feed block from right to left to 2. He then obtains a second belt of ammunition, places it on the ground, one yard to the right of the right gun wheel, and, after obtaining a third belt, lies down with it, if possible under cover, within six yards of gun, watching the belt in the gun so as to insert another when required.

4 supplies 3 with belts.

The gun is loaded as follows:— 1 turns the crank lever fully to the front; 3 passes the end of the belt through the feed block to 2; 1 gives the order "Pull;" on this order 2 pulls the belt as far as it will go; 1 then lets the crank lever fly back.

This operation is repeated, and the gun is loaded.

The position of the detachment is as follows:—

1 in line with the breech on the right side.

2 in line with the breech on the left side.

3 lying down, if possible under cover, within six yards of the gun.

4 in rear of the limber.

All the men face the front.

While in action the detachment will kneel or lie down when possible.

Action right, left, or rear are the same, except that at:—

Action right.—The trail is carried round a quarter of a circle only.

Action left.—The trail is carried round a quarter of a circle to the right, 3 in this case shifting round the trail eye.

Action rear.—The trail is not carried round.

The limber in all cases moves as described in "Field Artillery Training."

DUTIES.

1 commands, ships and unships the handspike, loads, sets the sight, attends to the regulator, and clamps the elevating and traversing gears during "Automatic fire."

He is responsible for the entire service of his gun.

Before leaving the gun park he will ascertain that the hydraulic buffer and water jacket are properly filled. He will also test and, if necessary, adjust the weight of the crank spring.

2 assists to load, lays, and fires.

3 Keeps the gun supplied with belts, and inserts each new belt in the feed-block. Before inserting a belt in the feed-block he will make sure that the shells fit properly in the belt, and that the fuzes are screwed home.

4 supplies 3 with belts.

REGULATOR LEVER.

The regulator lever should be set at "Safe," except when the gun is actually being fired; at "Single shots" when firing is to commence; and at "Automatic," if "Automatic fire" is ordered.

MISSFIRE.

If there is a missfire, 1 puts the regulator to "Safe," turns the crank lever fully to the front, and gives the order "pull." On this order, 2 pulls the belt on the left side, and 1 then lets the crank lever fly back. If on pulling the trigger the gun should again missfire, 1 puts the regulator to "Safe" and changes the lock.

TO STAND FAST.

| | | |
|---------------------------|--|-----------|
| <i>Section Commander.</i> | | <u>1.</u> |
| Section—Stand fast. | | |

At the order from the Section Commander—

All stand fast, whatever they are doing, except that 1 puts the regulator to "Safe." At the order "Go on," the work is continued.

WAGON SUPPLY.

One wagon for each section, or for each gun if ordered, is brought up as detailed in "Field Artillery Training."

As soon as the wagon or wagons halt, the 4's go to them and issue ammunition to their respective guns as before detailed.

The two highest numbers with the section unhook the wheel horses. When the team is unhooked, the highest number gives the order "Drive on."

At standing gun drill without wagons, 5, 6, and 7 stand five yards in rear of the limber.

TO CEASE FIRING.

| | | |
|---------------------------|--|-----------|
| <i>Section Commander.</i> | | <u>1.</u> |
| ... Section—Cease firing. | | |

At the order from the Section Commander—

The regulator is turned to "Safe," and if the gun is loaded it is unloaded as follows:—1 turns the crank lever fully to the front, and lets it fly back, then, by turning the crank lever partially to the front, he draws the lock back until the horns of the carrier are caught by the cam pawls; 2 then withdraws by hand the cartridge from the ejector tube. This operation is repeated, and thus the barrel and the carrier are emptied.

1 unships the handspike, and lowers the tangent sight.

2 clamps the elevating and traversing gears.

3 withdraws the belt (disengaging the retaining levers by pressing under the feed block), and returns belts to limber.

4 replaces the belt boxes, and closes the limber.

TO LIMBER UP.

Section Commander.

1.

.... Section—Front Limber up.

At the order from the Section Commander—2 and 3 carry the trail round half a circle to the right, 3 shifting round the trail eye to avoid walking backwards, and lower it to the ground. As soon as the trail is lowered to the ground the detachment get under cover.

1 in front of 2.

2 and 3 between breech and wheels.

4 and 5 between muzzle and wheels.

The whole with their backs to the axletree.

The limber comes up as detailed in "Field Artillery Training," and 1 orders, "Halt—Limer up."

At the order from 1—

2 and 3 lift the trail and place it on the hook, 3 keys up, 4 and 5 man the wheels.

On conclusion of the above the detachment mount without further order.

Right, Left, or Rear Limber up are the same, except that at Right Limber up the trail is carried round a quarter of a circle only.

Left Limber up.—The trail is carried round a quarter of a circle to the left, 2 in this case shifting round the trail eye.

Rear Limber up.—The trail is not carried round.

The limber in all cases moves as detailed in "Field Artillery Training."

FIRE DISCIPLINE.

1-pr. Q.F. guns act singly or in a section, the procedure being the same in both cases. Ranging will, as a rule, be carried out by one gun only, the other being kept loaded, the detachment lying down under cover during the process.

The methods of fire are:—(1) Single shots; (2) Automatic.

(1) "Single shots" may be under the control of 1, or of the Section Commander.

If under the control of 1 he sets the sights to the estimated range (when pointing out a target to a gun the Section Commander will usually give the estimated range) and gives the order "Shot," 2 then fires the gun as soon as it is correctly layed. 1 observes the burst, increases or decreases the elevation, according as the observation is — or +, orders "Shot," and observes the round. 1 again increases or decreases the elevation by about half the bracket, according to the observation of the second round, and thus continues bracketing until the range is found. If a round is observed "target," or if the observation is "doubtful," 1 will at once order "Shot," and so repeat the round.

As soon as the range is found, 1 will call out "Range....yards," The Section Commander will then order "Range....Single Shotsseconds," and the guns will be fired at the interval ordered. This refers to intervals between rounds from individual guns.

If no interval is ordered, each gun will fire single shots as rapidly as possible.

If under the control of the Section Commander, the procedure is the same, except that the Section Commander orders the elevation and "Shot" as required.

Control by 1 will be the ordinary procedure. If at any time the Section Commander wishes to take up the control, he will order "Controlled fire," and will give the ranges, and order "Shot" as above.

(2) "Automatic fire" may be ordered at any time that the necessity occurs. The procedure is the same as for "Single shots," except that, on receiving the order, 1 pushes over the regulator to "Automatic," and, instead of firing single rounds, groups of five or six are fired automatically, the gun being relayed if necessary after each group. More than five or six rounds in a group should not be fired, unless the target is large or the necessity urgent, such as in the case of covering an infantry attack, in which case a number of belts may be ordered to be fired as quickly as possible.

Automatic fire should be sparingly used, on account of the great expenditure of ammunition.

During automatic fire, 2 will call out "Clamp" as soon as the gun is layed; 1 will then clamp the elevating and traversing gears, releasing them again as soon as the group of rounds has been fired; 2 will then relay the gun, and the procedure will be repeated.

TO PUT THE GUN OUT OF ACTION.

Take away both locks.

TO PERMANENTLY DAMAGE THE GUN.

Bulge the casing, where the recoil takes place, with a pickaxe or other heavy tool.

1-PR. Q.F. EQUIPMENT.

LIST OF SPARE PARTS, APPURTENANCES, IMPLEMENTS, &c., FOR A
BATTERY OF 2 GUNS AND LIMBERS.

(a) Carried on Carriages.

| Articles. | No. per Battery of 2 guns. | | Where Carried. |
|----------------------------------|-------------------------------|----------------------|--------------------------------|
| | Mark I carriage. | Mark II carriage. | |
| Balance, spring, 40-lb. .. | — | 2* | In pocket on trail, left side. |
| Brushes, cleaning, Q.F., 1-pr. | 2 | 2 | In trail box. |
| Cans, lubricating, Q.F., 1-pr... | 2* | 2* | " " |
| Covers, gun | 2 | 2 | On gun. |
| Cutters, wire | — | 2 | In pocket. |
| Drifts, brass | — | 2* | In pocket on trail, left side. |
| Drivers, screw, G.S., 4-inch .. | — | 2* | " " " |
| Hammers, fitters, 16-oz. .. | 2* | 2* | In trail box. |
| Locks, percussion (spare) .. | 2* | 2* | " " |
| Mallets, raw, hide .. | 2 | — | Strapped to stay. |
| Pins { firing, percussion lock | — | 2 | On trail, left side. |
| | 6* | 6* | In trail box. |
| | 2 | 2 | " " |
| Punches { large .. | 2* | — | " " |
| | — | 2* | In pocket on trail, left side. |
| | 4* | — | In trail box. |
| Rods, cleaning, Q.F., 1-pr. { | — | 4* | In pocket on trail, left side. |
| | 2 | — | On trail, left side. |
| | — | 2 | In pocket on trail, left side. |
| Sights, Q.F., tangent, 1-pr. .. | 2 | 2 | In trail box. |
| Spanner, fuze, Q.F., 1-pr. .. | 1 | 1 | " " |
| Strikers, percussion lock .. | 2* | 2* | " " |
| Ties, linch-pin (spare).. .. | 8 | 8 | " " |
| Washers, drag | 2 | 2 | " " |
| Wrenches, Q.F., 1-pr. { A .. | — | 2* | In pocket on trail, left side. |
| | B .. | 2* | " " " |
| | C .. | 2* | " " " |

* To be taken from spare part box on the limber and placed in trail box or pocket when going into action.

(b) Carried on Limber.

| Articles. | No. per Battery of 2 guns. | Where Carried. |
|-----------------------------------|----------------------------------|--|
| Box, spare parts and tools | 2 | * On platform board. † In "off" compartment, front of limber. |
| Can, lubricating, Q.F., 1-pr. .. | 2 | |
| Balance, spring, 40-lb. | 2 | |
| Tampeon | 2 | |
| Packing, asbestos pieces | 8 | |
| Boxes, strips and eyelets | 4 | |
| Corks for plugs | 4 | |
| Plugs, cork, complete | 2 | |
| Lever, crank | 2 | |
| Eyelets, ammunition belt | 200 | |
| Strips, brass, ammunition belt .. | 100 | |
| Lock, percussion | 2 | |
| Lever, extractor { right | 1 | |
| left | 1 | |
| Strikers, percussion lock | 2 | |
| Pins, firing, percussion lock .. | 10 | |
| Gibs, percussion lock | 4 | |
| Pins, axis, trigger, lever | 4 | |
| " " " scar | 4 | |
| " " cocking lever | 8 | |
| " " extractor levers .. | 4 | |
| Cap, foresight | 2 | |
| Trigger, sears | 2 | |
| Lever, cocking | 2 | |
| Triggers | 2 | |
| Pin, hinge, cover | 2 | |
| " joint, elevating | 2 | |
| Sight, Q.F., tangent, 1-pr. .. | 2 | |
| Springs, ejector tube | 4 | |
| " extractor, percussion | | |
| lock, with rivets | 4 | |
| " retaining levers, feed | | |
| block | 4 | |
| " actuating levers, feed | | |
| block slide | 4 | |
| " trigger | 4 | |
| " main, percussion lock .. | 8 | |
| " pawl, cam guide | 4 | |
| " safety catch, percussion | | |
| lock | 4 | |
| " recoil plate with rivets .. | 4 | |
| " gib, percussion lock .. | 4 | |
| " socket, tangent sight .. | 4 | |
| " milled head, tangent | | |
| sight | 4 | |
| " trigger bar | 4 | |
| " gib pawl | 2 | |
| Washers, gland, breech mechanism | | |
| case | 4 | |
| Hammers, fitters, 16-oz. | 2 | |
| Punches, Nos. 1, 2, and 3 (set | | |
| of 3) sets | 2 | |
| Punches, eyelets, Q.F., 1-pr. .. | 2 | |
| Drifts, brass (sets of 2) | 2 | |
| Drivers, screw, G.S., 4-inch .. | 2 | |
| Extractors, firing pin | 2 | |
| Wrenches, Q.F., 1-pr. { A | 2 | |
| B | 2 | |
| C | 2 | |

* Mark I } limber.
† Mark II }

| Articles. | No. per Battery of 2 guns. | Where Carried. |
|---|----------------------------------|--|
| Vessel, water, brass | 2 | In leather holdall. |
| Funnels | 2 | |
| Holdalls, leather, water vessel and funnel | 2 | On "limber" (back of seat). |
| Tanks, water | 4 | *Under rear of limber. †2 under limber, 2 in front compartment. |
| Brushes, water | 2 | *On "off" side. †Near side. |
| Buckets, water, G.S., canvas .. | 4 | } Strapped to back of seat. |
| Ropes, drag, light, Q.F., 1-pr. pairs | 2 | |
| Box, grease, half round, 3 lb. .. | 2 | |
| Can, buffer, liquid .. (2 pints) | 2 | *On "near" side. †In front compartment. |
| Axes, felling, curved helve | 2 | *On platform board. †In front compartment. |
| „ pick | 2 | On "off" side. |
| Hooks, bill | 2 | *On "near" side. †Under limber. |
| Spades, N.P. | 2 | On "near" side. |
| Boxes, belt | 24* 4† | On "off" side. |
| Belts, ammunition | 24* 32† | In limber. |
| Glycerine and water pints | 4 | In can. |
| Cartridges | 600* 800† | In limber. |
| Cutters, wire | 2* | On limber. |
| Swingletree, No. 10 A .. spare | 1 | *On footboard. †On back of seat. |
| Oil | 1 | In can. |

* Mark I }
† Mark II } limber.

ARTICLES TO BE CARRIED IN REGIMENTAL TRANSPORT.

| Articles. | No. per Battery of 2 guns. |
|----------------------------------|----------------------------------|
| Spring, crank | 1 |
| „ barrel | 1 |
| Feed block | 1 |
| Barrels (in box) | 2 |
| Boxes, belt, ammunition | 6 |
| Belts, ammunition (empty) | 24 |
| Wheels (No. 54* or No. 158†) .. | 2 |
| Machine filling belts | 1 |
| Brace | 1 |
| Pincers, carpenters' | 1 |
| Driver, screw, 10-inch | 1 |
| Pole, draught (Nos. 15 or 16) .. | 1 |

* Mark I carriage and limber. See footnote *, p. 15.

† Mark II carriage and limber.

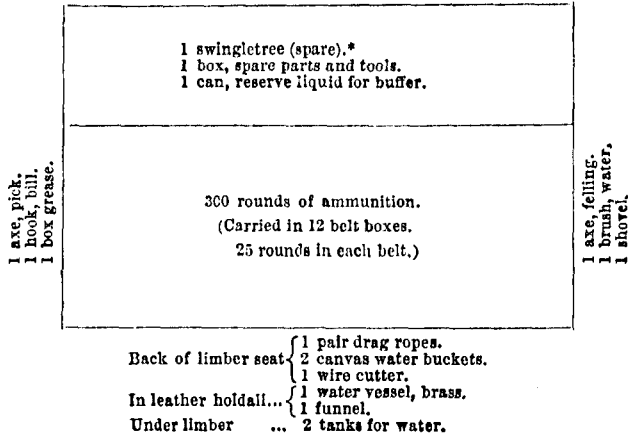
DIAGRAM OF PACKING.

1-PR. Q.F., MARK I EQUIPMENT.

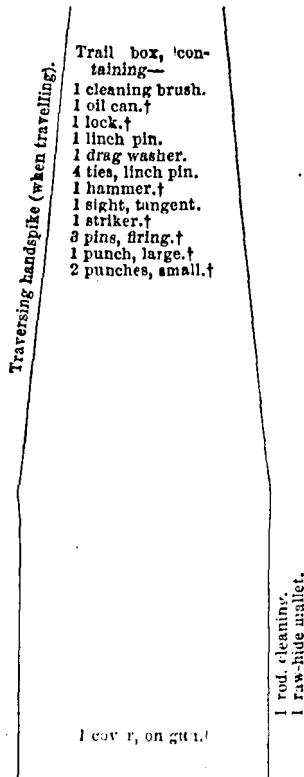
LIMBER.

'Near' Side.

"Off" Side.



CARRIAGE.



* 1 spare swingletree per 2 guns.

† Placed in trail box before going into action.

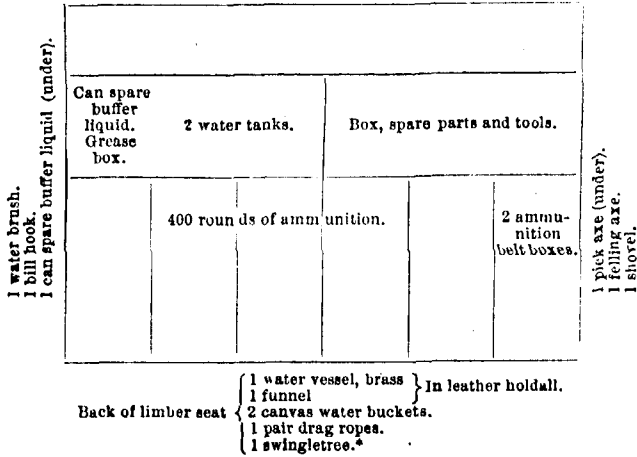
DIAGRAM OF PACKING.

1-PR. Q.F., MARK II EQUIPMENT.

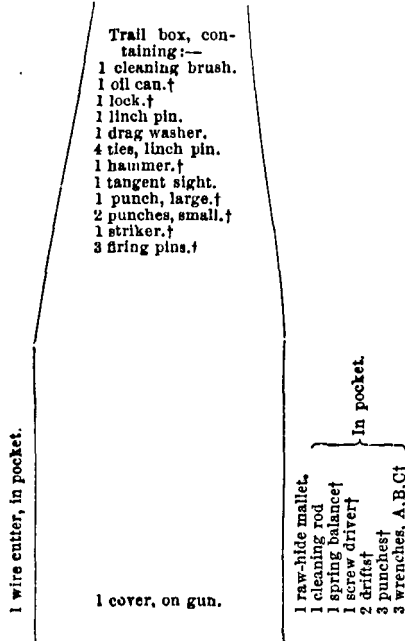
LIMBER.

"Near" Side.

"Off" Side.



CARRIAGE.



* 1 spare swingletree per 2 guns.

† Placed in trail box before going into action.

1-PR. Q.F. GUN.

LIST OF PARTS SHOWN IN PLATES I TO IV.

Similar numbers indicate corresponding parts in each of the above-mentioned Plates.

- | | |
|---------------------------------------|---|
| 1. Lock frame. | 41. Buffer, piston. |
| 2. Safety catch. | 42. Washer, gland, breech mechanism case. |
| 3. Safety catch spring. | 43. Ring, buffer. |
| 4. Safety catch axis pin. | 44. Crosshead. |
| 5. Striker. | 46. Trigger bracket. |
| 6. Firing pin. | 47. Trigger lever. |
| 7. Actuating lever axis pin. | 48. Trigger. |
| 8. Cocking lever. | 49. Regulator lever. |
| 9. Cocking lever axis pin.* | 50. Connecting link. |
| 10. Trigger sear. | 51. Trigger bar. |
| 11. Trigger sear axis pin.* | 52. Trigger spring. |
| 12. Main spring, percussion lock. | 53. Tangent sight bracket. |
| 13. Extractor lever axis pin. | 54. Tangent sight. |
| 14. Trigger sear guard. | 55. Foresight bracket. |
| 15. Trigger sear guard fixing pin.* | 56. Elevating bracket. |
| 16. Extractor. | 57. Crank lever. |
| 17. Gib, percussion lock. | 58. Latch, crank lever. |
| 18. Gib spring. | 59. Roller, breech mechanism case. |
| 19. Gib spring, cover. | 60. Trunnion of gun. |
| 20. Extractor spring. | 61a. Pin, taper, fixing barrel case. |
| 21. Actuating lever, percussion lock. | 61. Pin, taper, fixing buffer block. |
| 22. Crank connecting rod. | 62. Studs for ammunition box bracket. |
| 23. Crank hinge pin. | 63. Crank spring case. |
| 24. Crank. | 64. Cover plate. |
| 26. Recoil plates { right. left. | 65. Guide block. |
| 27. Barrel. | 66. Cover securing pin. |
| 28. Breech gland. | 67. Feed block. |
| 29. Ejector tube. | 68. Retaining levers, feed block. |
| 30. Ejector tube spring. | 69. Actuating levers, feed block slide. |
| 31. Ejector tube spring fixing screw. | 70. Feed block slide. |
| 32. Barrel case. | 71. Crank lever, feed block (part 2). |
| 33. Extractor lever, percussion lock. | 72. Crank lever, feed block (part 1). |
| 34. Cams, guide, right and left. | 73. Filling plug. |
| 35. Pawl, guide cam. | 75. Emptying plug. |
| 36. Spring, pawl, guide cam. | 76. Slide valve, steam tube. |
| 37. Side plates { right. left. | 77. Barrel spring. |
| 38. Buffer block. | 78. Muzzle stuffing box. |
| 39. Buffer case. | 79. Cap, barrel case. |
| 40. Buffer gland. | 80. Muzzle packing gland. |

* Pin, axis, cocking lever, percussion lock, also trigger sear; also fixing pin for trigger sear guard.

- | | |
|--|--|
| 81. Barrel nut. | 97. Cover joint pin. |
| 82. Slide, side plates { right. | 109. Crank spring. |
| { left. | 110. Hook in crank spring case. |
| 85. Asbestos packing, breech. | 111. Hook on crank. |
| 86. Asbestos packing, muzzle. | 112. Screws set, crank spring case. |
| 88. Roller nut, breech mechanism case. | 113. Axis pin, actuating levers, feed block slide. |
| 89. Steam tube plug, front. | 114. Spring, actuating levers, feed block slide. |
| 90. Steam tube plug, rear. | 115. Axis pin, retaining levers, feed block. |
| 91. Steam tube. | 116. Spring, retaining levers, feed block. |
| 94. Hard steel piece, percussion lock. | 117. Foresight cap. |
| 95. Screw fixing hard steel piece. | |
| 96. Gib pawl with spring. | |

NOTE.—Nos. 25, 45, 74, 83, 84, 87, 92, 93, 98 to 108 omitted.

N.B.—See p. 24 for nomenclature to be used in demanding stores.

ALTERATIONS.

| Para. of List of Changes. | Nature of Change. | Remarks. |
|---------------------------|-------------------|----------|
| | | |

| Para. of List of Changes. | Nature of Change. | Remarks. |
|---------------------------|-------------------|----------|
| | | |

| Para. of List of Changes. | Nature of Change. | Remarks. |
|---------------------------|-------------------|----------|
| | | |

| Para. of List of Changes. | Nature of Change. | Remarks. |
|---------------------------|-------------------|----------|
| | | |

| Para. of List of Changes. | Nature of Change. | Remarks. |
|---------------------------|-------------------|----------|
| | | |

| Para. of List of Changes. | Nature of Change. | Remarks. |
|---------------------------|-------------------|----------|
| | | |

| Para. of List of Changes. | Nature of Change. " " | Remarks. |
|------------------------------|-----------------------|----------|
| | | |

| Para. of List of Changes. | Nature of Change. | Remarks. |
|---------------------------|-------------------|----------|
| | | |

| Para. of List of Changes. | Nature of Change. | Remarks. |
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| Para. of List of Changes. | Nature of Change. | Remarks. |
|---------------------------|-------------------|----------|
| | | |

| Para. of List of Changes. | Nature of Change. | Remarks. |
|---------------------------|-------------------|----------|
| | | |

| Para. of List of Changes. | Nature of Change. | Remarks. |
|------------------------------|-------------------|----------|
| | | |

ORDNANCE, Q.F., 1-PR., MARK I.

SIDE ELEVATION.

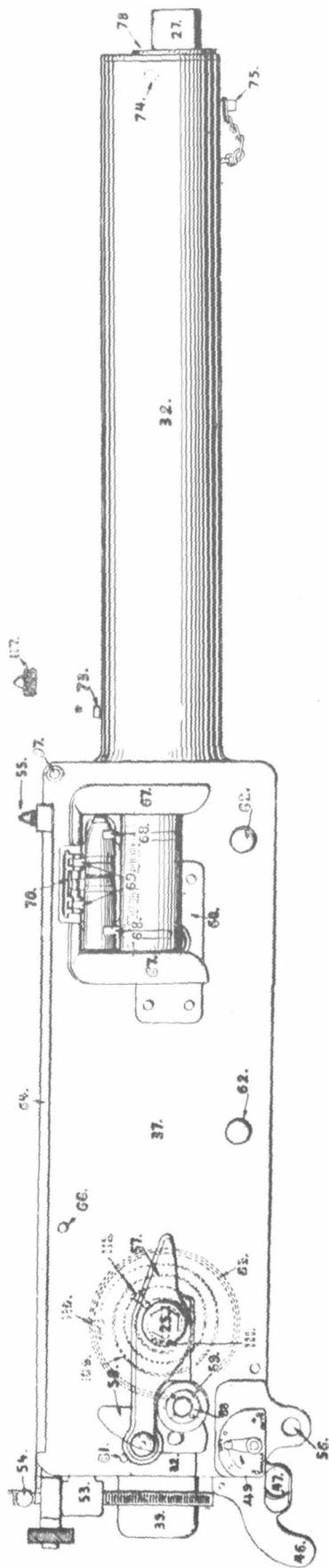


FIG. I.

LONGITUDINAL SECTION.

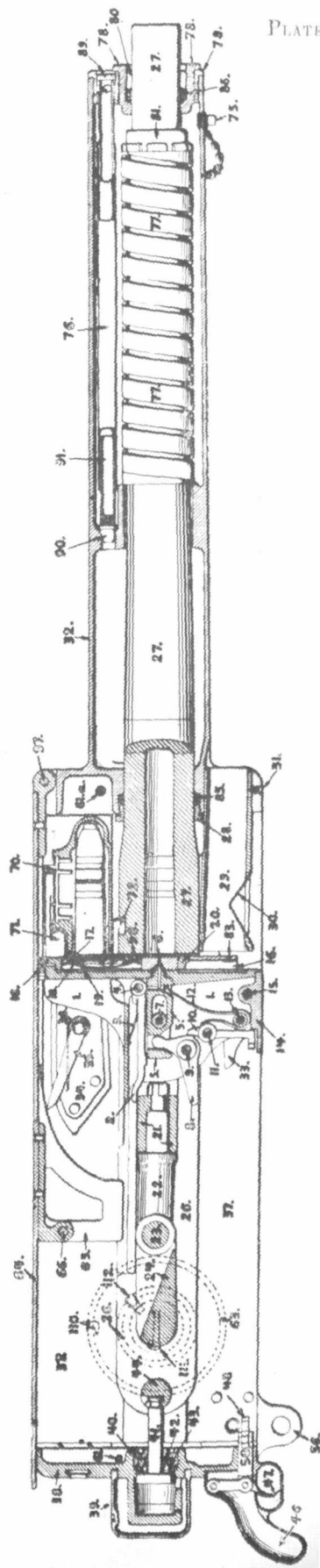


FIG. II.

ORDNANCE, Q.F., 1-PR., MARK I.

LOCK, PERCUSSION.

SECTION.

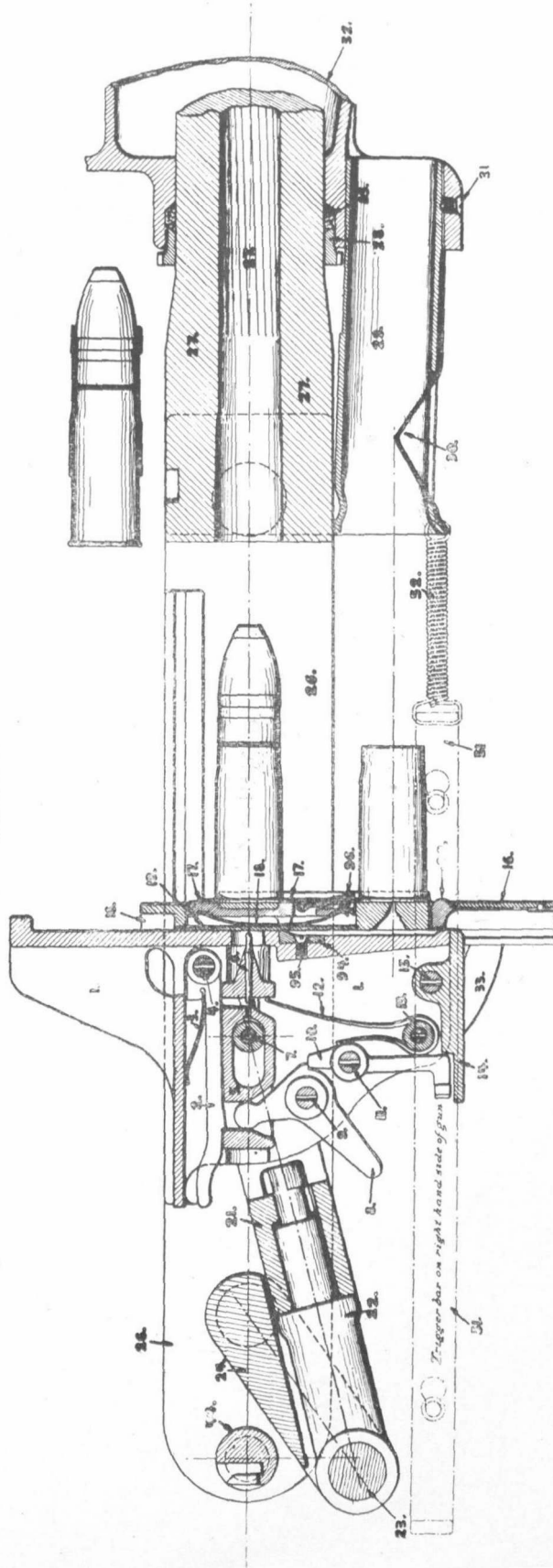


FIG. IV.

ORDNANCE, Q.F., 1-PR., MARK I.

FEED BLOCK.

ELEVATION.

FIG. V.

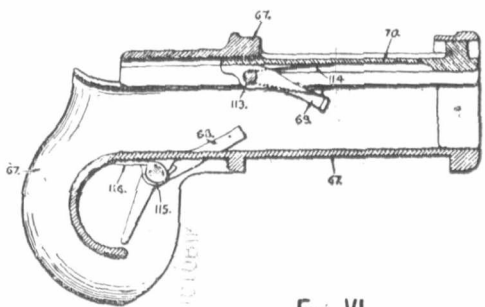
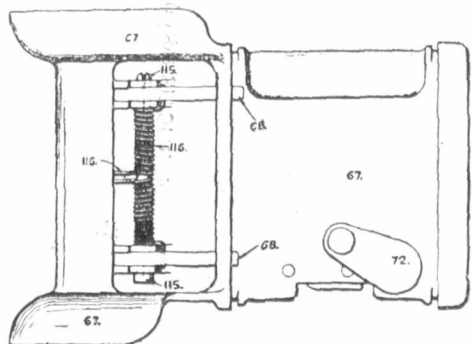


FIG. VI.



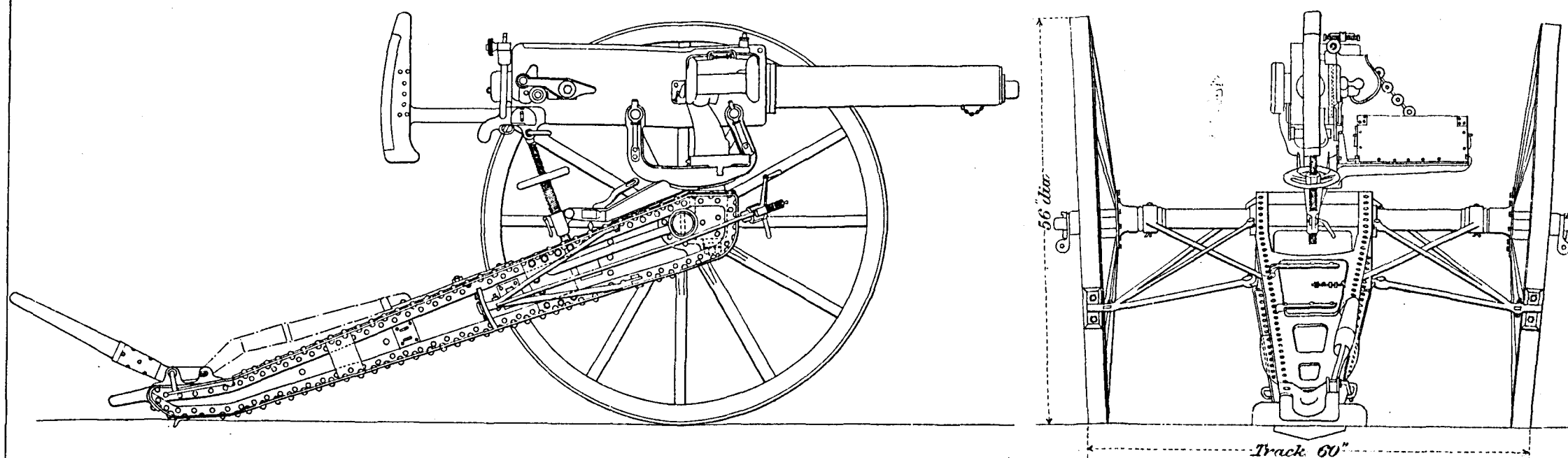
PLAN.

CARRIAGE, FIELD, Q.F., 1-PR., MARK I

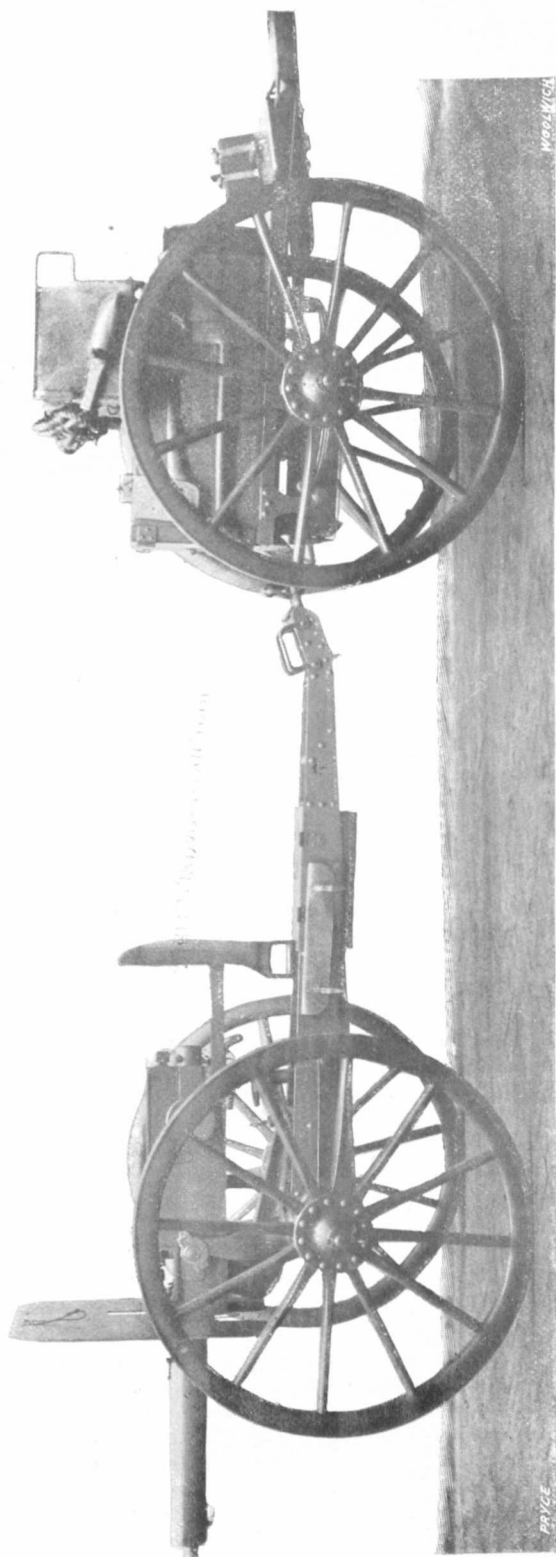


CARRIAGE, FIELD, Q.F., 1 P^R MARK II.

— SCALE = $\frac{1}{18}$ —

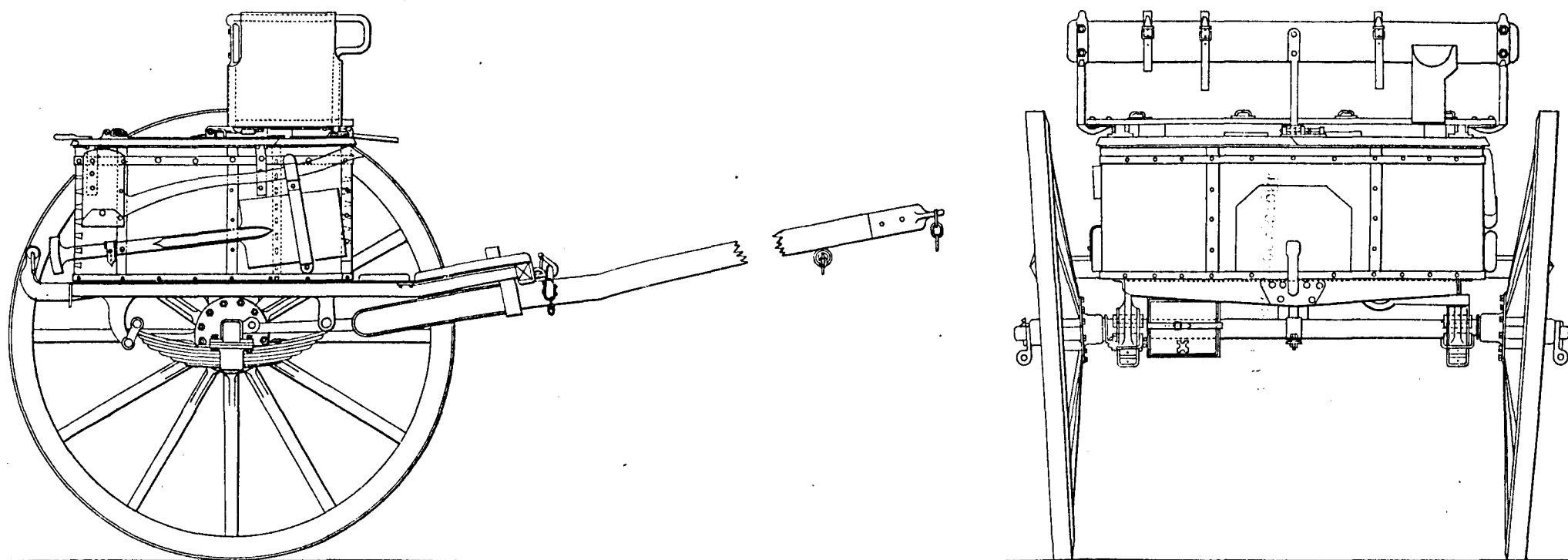


CARRIAGE AND LIMBER, Q.F., L-PR., MARK I.

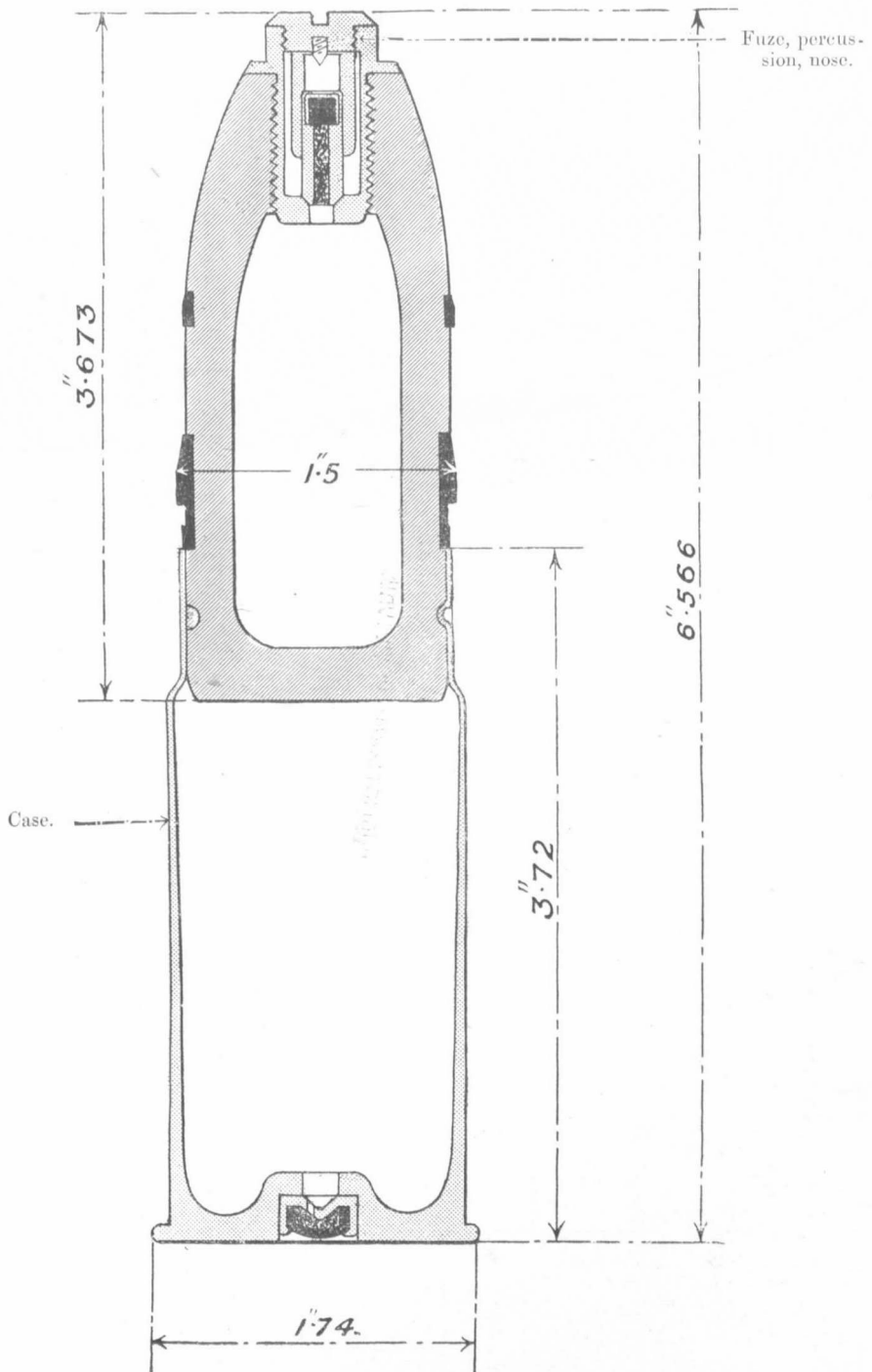


LIMBER, FIELD Q.F. 1 P^R MARK II.

— SCALE = $\frac{1}{18}$. —

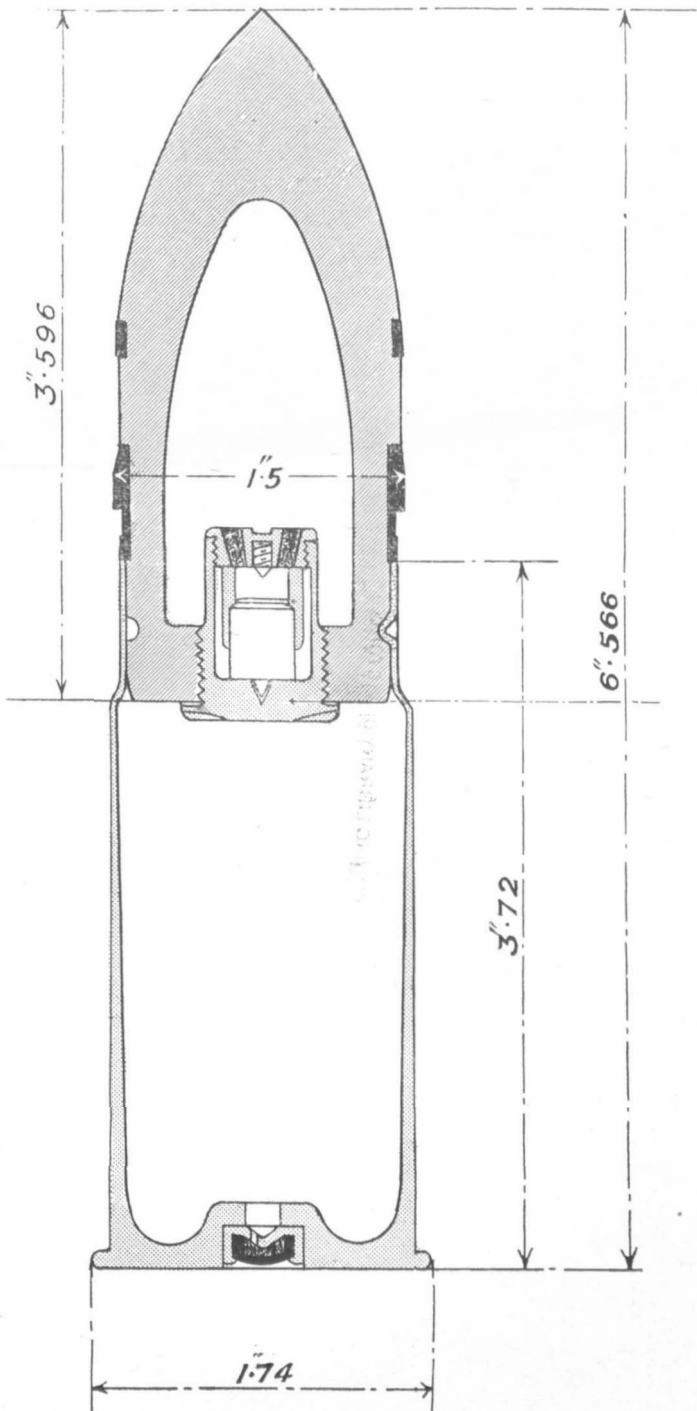


CARTRIDGE, Q.F., 1-PR., MARK I.
COMMON SHELL.



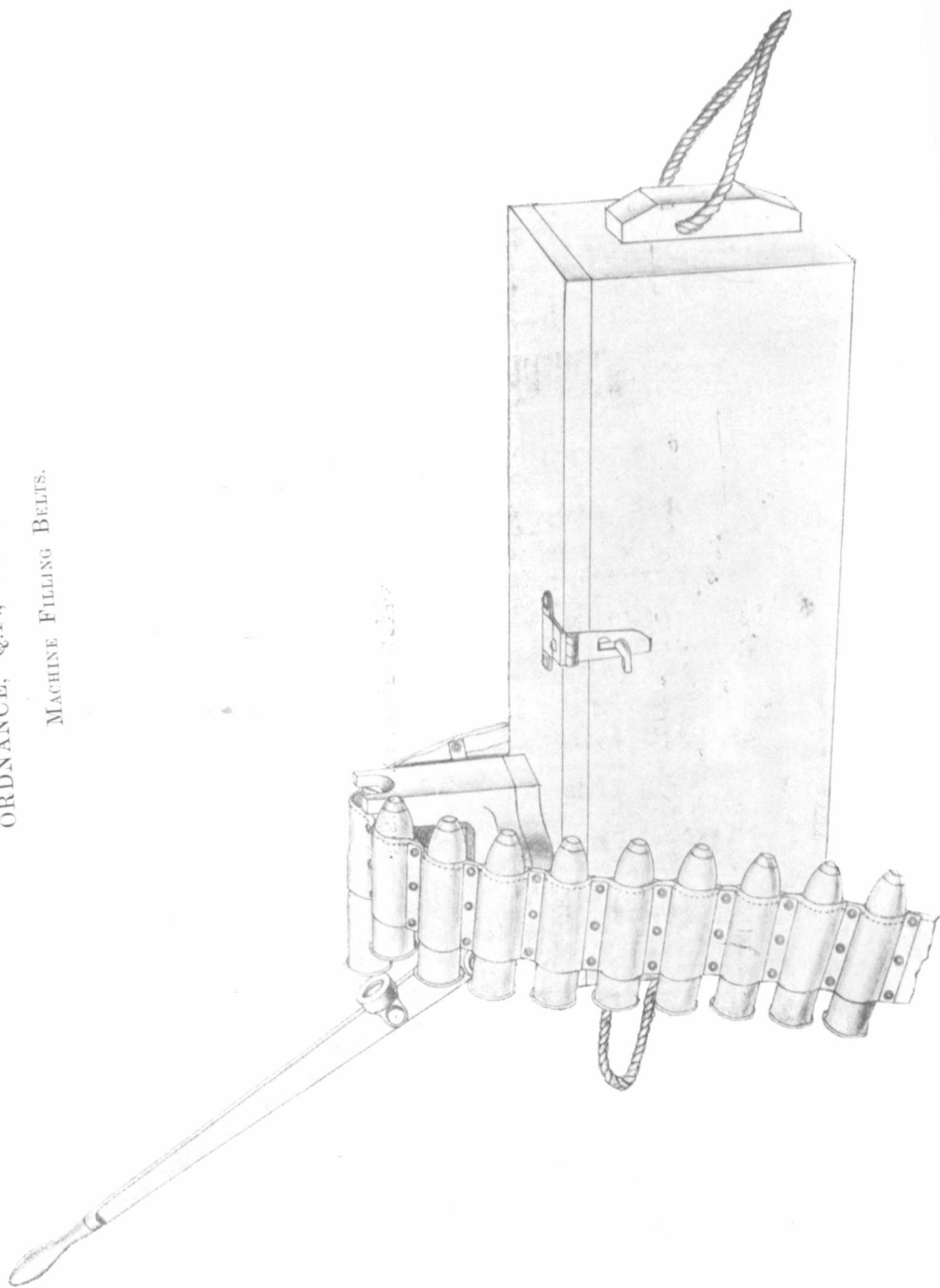
CARTRIDGE, Q.F., 1-PR., MARK I.

STEEL SHELL.

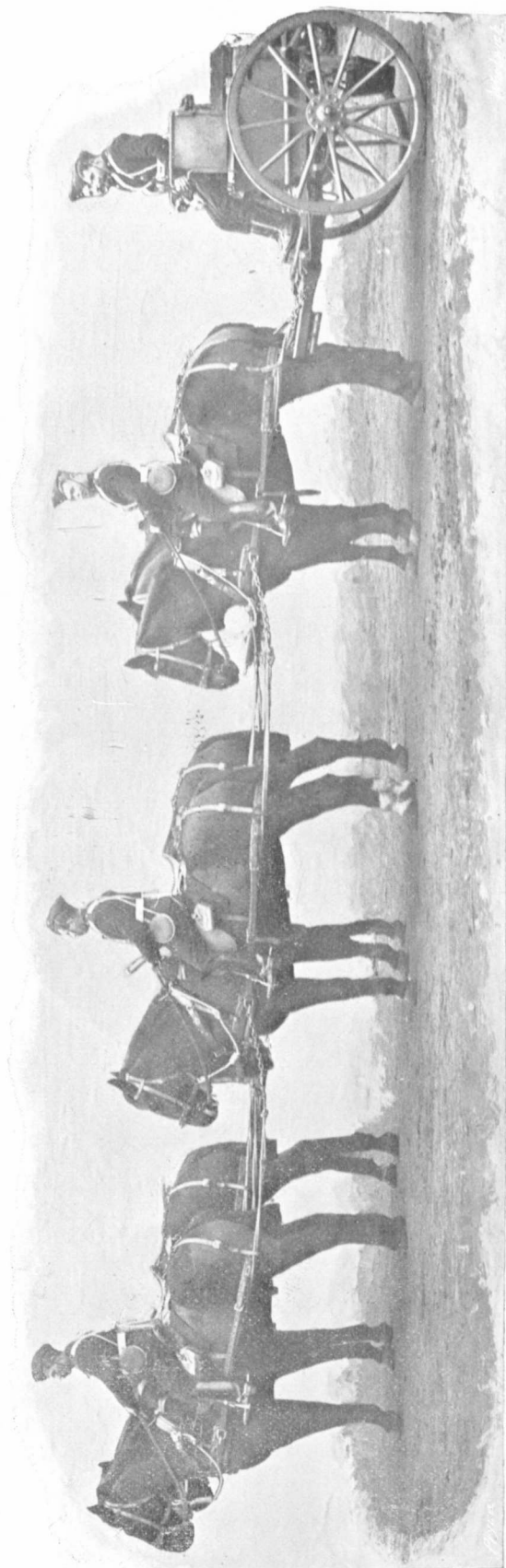


Fuze, percus-
sion, base.

ORDNANCE, Q.F., 1-PR., MARK I.
MACHINE FILLING BELTS.

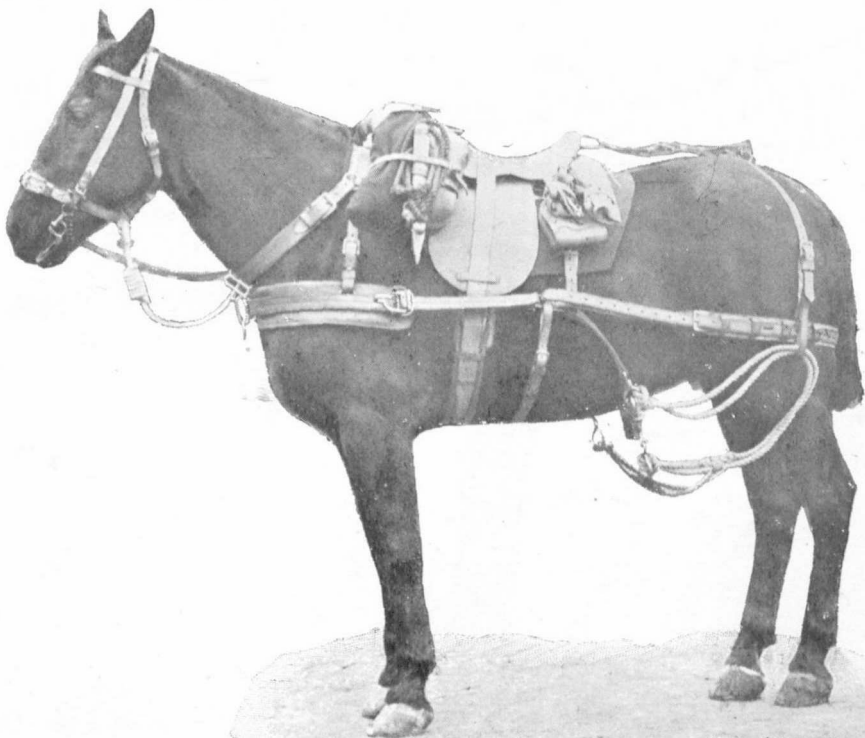


HARNESSES FOR Q.F., 1-PR., MARK I EQUIPMENT.



HARNESS FOR Q.F., 1-PR., MARK I EQUIPMENT.

NEAR SIDE.

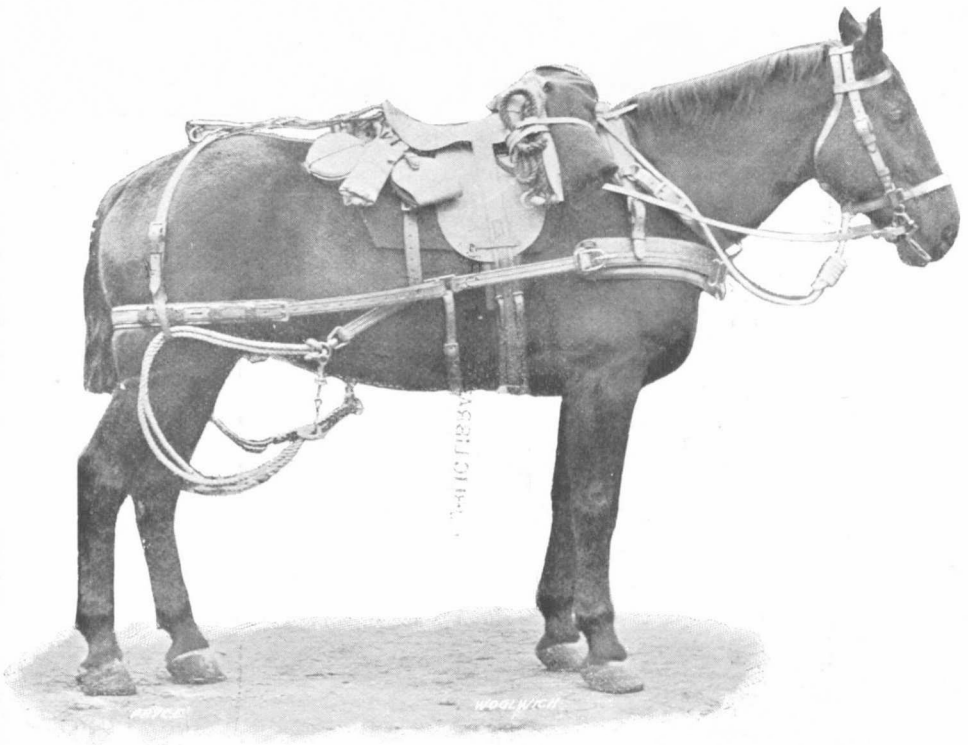


PRICE

WAGNER

HARNESS FOR Q.F., 1-PR., MARK I EQUIPMENT.

OFF SIDE.



HARNESS FOR Q.F., 1-PR., MARK I EQUIPMENT.

SHOWING POLE DRAUGHT.

